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GENERAL IDEAS IN MEDICINE*

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On August 2nd, 1775, John Hunter wrote to Edward Jenner a short letter, which contained what are perhaps to-day his best-known words. Jenner had asked for his opinion on a problem of natural history, and Hunter suggests that the question could be settled experimentally; and then he breaks out into one of his brusque, impatient phrases, "But why think, why not try the experiment?" In this small outburst the piety of later times has sometimes seen profundities it might have surprised its author to be notified of, and has even given to it the status of an aphorism pregnant with the wisdom of the newer world. We may incline to regard these rather high-flown interpretations as belonging to the sphere of Hunterian Orators, where such tropical growths naturally bloom. Nevertheless, the phrase on which they are founded is a text well suited to guide some reflections on the relation of thought and action in the advancement of knowledge. Any such discussion must traverse treacherous ground, and we should therefore not be afraid of limiting ourselves to elementary considerations or of defining our terms with care.

In the life story of mankind two implements of knowledge can be plainly seen at work. I have already called them thought and action, and our first tasks must be to make clear what is meant by them and to identify some of the many names by which they may be known. By action as contrasted with thought I mean man's direct dealings with phenomena by way of observation and experiment, or in the broadest sense of the word, experience. By thought as contrasted with action I mean the rational contemplation of experience and the integration of it into generalized expressions; I shall speak of the use of reason or of the rational mind and of abstract thought as having the same meaning.

It is one of the most curious features in the history of man that his sole uniquely human character, the rational mind, has borne a relation to the advance of knowledge that has always been capricious, often ambiguous, and sometimes hostile. It seems so natural to take it for granted that reason has been the steady friend of truth that a statement of the facts has an air of paradox. If, however, we are to fight shy of the paradoxical, no inquiry into the history of knowledge will take us far. Not less surprising than the enigmatic relation of reason to truth is perhaps the lateness of the date at which it first seems to have occurred to man that the intellect could be deliberately used. Cultures of great vigour and elaboration had climbed to their zenith and died before we get our first glimpse of reason at work on human destiny in the great days of ancient Greece. There we see the rare spectacle of a new and powerful instrument in hands fully competent for its use. The world has come to agree that there never has been anything else quite like the efflorescence produced by the happy union of the Greeks' discovery of abstract thought, and the exulting brilliance with which they applied it. Up to that moment man's only implements for discovery and for preserving its fruits were the practical arts. The characteristic limitations of that method had made him the deferential slave of phenomena; henceforth he was to be in some sense their conscious master. It will be our task to try to get a clear idea of the instrument that could produce this revolution, and then to trace its influence in later times.

The Nature of Abstract Thought

The discovery that we first clearly find in use by the Greeks was that the qualities of objects can be thought of as separable from them. Such abstracted qualities can be recombined and handled within the mind with a facility and fruitfulness impossible in our dealings with actual objects themselves. If complete abstraction of the qualities of the outer world were possible our reconstruction of them in thought would be as valid as the originals, and a true experimental science within the mind would be feasible. It seems probable that the Greeks thought this to be the case, and excusably in the first flush of their discovery. That error has beset the progress of knowledge for two and a half millennia, and compels us to regard the discovery of abstract thought as in some degree a Grecian gift in the old ambiguous sense. For it is a stubborn, though, unfortunately, an elusive, fact that valid abstraction from phenomena in general is only a limited possibility. As far as we know number is the only quality that can be completely abstracted from objects, so that the experience of number within the mind is just as valid as the experience of number attached to external objects, and of course far more easily subject to experiment. Thus the science of number is the single science that is at once fully abstract and fully experimental. The science of spatial relations runs it very close, and it was two thousand years or more before suspicion arose that the abstract space of the mind was not exactly the same thing as space in general. The Greeks were quick to see how well number and space lent themselves to the new method, and very obviously reserved a special reverence for the two corresponding sciences—not always without queer results.

As we move away from number and space abstract thinking becomes less and less able to represent usefully the actual world. In biology the most elaborate abstractions are apt to be mere crude diagrams, and, through disproportionate emphasis, easily pass into caricature. The decline in the effectiveness of abstraction with increase in the multiformity of the phenomena is a familiar fact.

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The implement so useful to Galileo in attacking mechanics is scarcely recognizable in the hands of Herbert Spencer generalizing biology, even if we grant the powers of the two men to have been equal. It is not, however, the limitations of the method that concern us chiefly here. What is more important in the history of science and of medicine is the tendency of abstract thinking to interpose between the inquirer and the phenomena and to give a diminishing importance to the latter. One universal law has always governed the evolution of knowledge ; it is that progress is directly proportional to the closeness of the relation of the inquirer and the facts. Now facts unfortunately are not the natural diet of the mind. They are laborious and often undignified to collect ; they are apt to be formless, ugly, and even nasty ; they dirty the fingers, they smell and sometimes bite. How different from the noble shapely, and above all well behaved, conceptions of the mind, which are so manifestly of a higher order of reality! The fastidious Greeks were very sensitive to this difference and not a little apt to look down on the mere base collection of facts. Even the tremendous Aristotle was not quite untouched by this intellectual queasiness.

Reason Enthroned

Faith in the ultimate supremacy of reason must tend towards a dogmatic rationalism. This tendency was not without its ill effects on the pursuit of knowledge by the ancient Greeks, but was to a great extent compensated for by their unique curiosity and aptitude for free thought. It could not keep such a people out of contact with facts, as we see repeatedly throughout the long period from the clinical observations of Hippocrates and the biology of Aristotle down to the experimental physiology of Galen. But when it was handed on to minds less happily situated and less richly endowed, and had been developed into the flawless and invulnerable rationality of the scholastics, rationalism became a much more formidable barrier to the progress of knowledge than it had been as the relatively innocent foible of the Greeks. Mediaeval rationalism was strong enough to embody in a reasonable structure all known facts. It needed no new ones, and could scarcely have regarded the collection of such as other than foolish and unnecessary.

One of the most deeply enigmatic events in human history is that after the time of Galen science, and with it medicine, underwent no large change but that of decline for a full thousand years. I shall not yield to the temptation to speculate about the causes of this astonishing coma of the human spirit. Many explanations of it have been propounded, and have been for the most part as confident in their presentation as they were incredible in their substance. While bluntly admitting that the fact is unexplained, we may note that in its circumstances there were features that may have been related to it. The most obvious of these was the development of dogmatic rationalism into a system which could give a coherent and consistent account of nature, of man, of the spiritual world, and of any other kind of world that might be supposed to exist. The second and far the more mysterious feature was a lapse of that kind of curiosity for the outer world that makes phenomena interesting in themselves. This is the fundamental impulse of science ; without it science is impossible, with it science cannot fail ultimately to appear. Whether or not we may suppose the eclipse of curiosity to have been causally related to the long night of science, it is certain that no dawn could have broken until that eclipse had ended.

The way in which science was born again confirms this principle. It has been shown by Singer that the renaissance of science in the sixteenth century had been prepared for by a long period, during which a reawakened interest in the outer world was gathering momentum. He takes the memorable year 1543, in which were published the masterpieces of Vesalius and Copernicus,[1] as a convenient date to mark the first full light of the scientific renaissance ; and he gives evidence of a steadily growing body of work produced in the previous two hundred years that proves interest in external phenomena once more to have been alive. Thus the renaissance of science was of necessity and in fact preceded by a renaissance of curiosity.[2]

Rationalism at the Renaissance and After

The revival of science was not due to or accompanied by any corresponding decline in rationalism. The giants of the Renaissance appear to have been untroubled by any suspicion that reason was not the ultimate arbiter of truth. The symmetry, the acceptability, in short the reasonableness, of a doctrine still seemed the major and final evidence of its truth. No doubt had arisen of the assumption that the sense of rationality corresponds with a similar order in the outer world. Medical theory could still base itself on the four elements, the four humours, and the four temperaments as fundamental truths ; and it was long before astronomy ceased to prove that the orbit of a planet must be a circle because that is the perfect curve. All that had happened was that facts had re-established their birthright. There were no qualms about how troublesome these upstarts were likely to become. They were, of course, to prove a decisive factor in the situation.

From the time of the Renaissance the accumulation of fact was to proceed at first with a moderate, but at length with an overwhelming acceleration. The faith in reason underwent no debilitation from within, but began to suffer a certain dilapidating erosion from without. Rationalism lost its scholastic severity and perhaps gained thereby in attractiveness. The change introduces us to a third period in its evolution, which in contrast with the ingenuous rationalism of the Greeks and the austere rationalism of the Middle Ages we might call latitudinarian. By this time medicine had become distinct enough for us to consider it more or less apart from science in general. We have reached the period lying between the massive discoveries associated with the names of Vesalius, Servetus, and Harvey, on the one hand, and the not less revolutionary work of Pasteur and Lister on the other. Here we have a stretch of roughly 200 years, comprising the eighteenth and about half of each of the adjacent centuries. Discovery, of course, proceeded actively throughout this time, and the accumulation of knowledge soon became enormous. The causation of disease was still obscure, for no single fundamental element of it had been established. The field therefore was as free to the theorist as it had been in ancient Greece, but there were two fresh elements. These were, first, the now very great store of facts, and, secondly, the decline in rationalistic rigour.

The characteristic feature of the period was the exuberance with which doctrine flourished. Almost every eminent medical personage—who might well at the same time be making solid contributions of fact to medicine—was the exponent of a theoretical system of disease. This system, devised by its inventor according to some inspirational method of his own, was often as detached from reality as it was precise and dogmatic. It is impossible to review the innumerable systems that sprang into life and often so surprisingly survived ; I can only mention a few names taken almost at random from Garrison's well-known work,[3] and trust to be able to convey some of the quality of their doctrines.

Early in our period there is Georg Ernst Stahl, whose life almost exactly corresponds with the interval between

the death of Harvey and the birth of Hunter. He taught an animism which regarded the body as a mechanical puppet, whose functions were maintained by the direct action of the soul. Misbehaviour of the soul was therefore the cause of bodily disease. It seemed to be a necessary consequence of this theory that drugs could have no action on the body, and like a good rationalist Stahl denied that they had. His responsibility for the many animists and vitalists who followed him is perhaps less heavy than for the phlogiston theory with which he burdened chemists, for this theory is perhaps the most perfect example in the world of ideas of the mysterious viability of the false. Then there is John Brown, whose life coincides roughly in time with that of Hunter, and who was the author of the famous Brunonian system. This product of reason is said to have been remarkably complete and consistent; it divided diseases into sthenic and asthenic, and treated them respectively with opium and alcohol, drugs to which Brown himself, less tough than his system, early succumbed.

The air of caricature never fails to show itself in the products of reason applied relentlessly and without correction. The observation of clinical facts would seem to be a pursuit of the physician as harmless as it is indispensable. Reason, however, could scarcely stop at so elementary a phase as this, and it seemed irresistibly rational to certain minds that diseases should be as fully classifiable as are beetles and butterflies. This doctrine found its most eminent cultivator in the great Sydenham, but bore perhaps its richest fruit in the hands of Boissier de Sauvages. In his *Nosologia Methodica*, published in 1768, the year of Hunter's appointment to St. George's, this Linnaeus of the bedside grouped diseases into ten classes, 295 genera, and 2,400 species. Towards the end of our period these particular developments met an opponent in Broussais, who lived till Lister was 11 and Pasteur 16. For Broussais disease in the sense of the nosologist had no existence. Diseases were for him consequences of local irritation and resulted in gastro-enteritis, which was the essential pathological lesion of all maladies. Broussais' quality is shown by his aphorism *La nature n'a aucun pouvoir de guérison naturelle*: believing this, he knew that recovery depended solely on the exertions of the physician. Since the condition he had to contend with was always an irritation and could be met by reducing the patient, he set himself to starve and bleed with a dreadful rigour. The lapse of a hundred years has made this doctrine seem no more than gruesome balderdash, but it was not without plausibility for the contemporary world. In fact, no less a surgeon than the great Dupuytren was a believer, and was accustomed to add to his mere surgical powers of reducing his patients the sterner measures of his colleague.

If these instances give a fair sample of what the intellect was doing for medicine for 200 years, it is not perhaps surprising to find Hunter about the middle of that period exclaiming impatiently, "Why think?"

The Decline of Rationalism in Medicine

When we pass on to consider the state of affairs that obtains at present the first thing that strikes us is that no one is likely to make that exclamation now. I can imagine no reproach less likely to be needed. A reorientation has occurred towards what can be done by rational speculation for the advancement of knowledge. We can scarcely bring ourselves to listen to anyone who is not actually engaged in investigating facts, and to call an author speculative is a severe censure.

This change has been the result not of deliberate choice but of the pressure of circumstances. These circumstances have been the overwhelming success of the method of experiment in recent times, and the fabulous rate at which the accumulation of ascertained fact has progressed. There can be no reasonable doubt that the decline in the influence of rational speculation has coincided with a period in which the increase of knowledge has been rapid beyond example. Even if we can be sure, as I think we can, that the increase of knowledge was in no sense caused by the decline in speculation, we are left with but another confirmation of a conclusion that has become increasingly clear throughout this discussion. That conclusion is that at no time right up to the present day has medical doctrine borne any close and functional relation with medical discovery. If we handle this rule without trying to enforce it absolutely, and with a reasonable breadth of interpretation, we shall find it applies to every period of medical history. Although this conception is not generally and consciously recognized, and as far as I know has never even been specifically enunciated, it has long been acted on both in medicine and in science. There can therefore be no purpose in failing to admit that, in general, discovery has been the result of action rather than of thought. Fact has led to fact, observation to observation, experiment to experiment; and there has been little or no long range guidance from rational contemplation and foresight. The relation of doctrine and discovery has not only been without co-operation, it has often been hostile; for the progress of knowledge has again and again been arrested or embarrassed by supposedly rational arguments and accepted principles. The historian is apt to be indignant at the obstacles to new knowledge offered by the censure of theologians and the persecution of ecclesiastics. Theologian and ecclesiastic have no doubt done their best, but the effect of their utmost zeal has been insignificant in comparison with that resulting from the conscientious use of the rational mind.

The Function of Rational Thought in Medicine

If we accept the view that the cultivation of the theoretical side of medicine has on the whole delayed progress, should we not rejoice in the fact that that kind of study has been almost wholly destroyed by the pressure of experiment and its great success? In that case we should be able to give a definite answer to the Hunterian interrogation with which I began. Why think? Why indeed! The situation, however, is not quite so simple as to be settled in that way, and there are at least two strong reasons why a permanent abeyance of the theoretical, speculative, and rational element in the pursuit of medicine could not be regarded as wholly satisfactory.

In the first place experience seems to show that a branch of knowledge strictly limited to experiment and without any kind of speculative admixture tends in time to lose its inspiration and drift into a dry and rigid orthodoxy. Some such decline was perceptible in the physical sciences towards the end of the nineteenth century, and there can be little doubt that a strict reliance on experiment alone would in the long run have a similar deadening effect on scientific medicine. In the second place medicine is, as we shall point out more fully later, a composite subject. One of its elements is an experimental science, but a large part of it obeys the very different discipline of a practical art. In consequence it has often to deal with and act upon incompletely definable situations, and to develop the faculty of practical judgement on imperfect evidence—an activity characteristically absent from an experimental science. As long, therefore, as medicine continues to be so largely an activity of a non-scientific kind, every faculty of the active, rational mind is to be desired in the practice of it. But as we have already been at pains to point out, the exercise of the rational mind in the attempt to integrate and theorize medicine has been abundantly tried, and has always proved singularly ineffective, if not harmful.

The issue from this dilemma is a very obvious one, although one which there seems to be a strange disinclination to take. It lies in dispersing the delusion that practical thought is easy, needs no training or precaution, and is available forthwith for anyone who turns his mind to it. Psychology has shown how little these expectations are likely to be realized, but it has not accepted the complementary duty on the positive side of producing a definite method of elementary instruction in effective thought. Among the reproaches, just and unjust, to which that science is exposed this is one of the more serious, that it has failed to show us by precept, and especially perhaps by example, how to think. It would be presumptuous in me to pretend to the ability even to enter on such a task, but one or two fundamental principles may be mentioned as the more obvious of the foundations of such an undertaking.

The physical organs and aptitudes of the body do their work only under definite conditions, and in using them no one doubts the need for practice and for acquiring a sound technique. The intellect, on the other hand, seems to its user to be an apparatus already perfected, needing no exercise or instruction, but sprung into being ready to carry out its functions without flaw or friction. In actual fact it is as much a biological product as the bodily organs, and subject to similar conditioned functioning ; it is as squeamish in its way as the stomach, and as selective as the kidney or choroid plexus. Some of the restrictions on the working of the rational mind are probably structural and therefore inveterate, like the inability to conceive space in more than three dimensions and possibly others we do not even suspect. The practically important ones, however, are functional, and can be reduced or in some degree eluded through awareness and training. It is a rather crude but substantially true description of these obstacles to free thought to say they are all due, more or less directly, to the interpenetration of all thinking—even the most completely abstract—by the needs, the fears, the wishes of the thinker. The dispassionate intellect, the open mind, the unprejudiced observer, exist in an exact sense only in a sort of intellectualist folklore ; states even approaching them cannot be reached without a moral and emotional effort most of us cannot or will not make. There are few terms in such deep disgrace nowadays as altruism, and perhaps justly so, for it has been the excuse for a good deal of s lliness. Nevertheless, something in the nature of altruism in the plain sense of the word and with no mystical implication is necessary for effective thought. For there can be no approach to truth without some threat to the thinker's personality.

Simple Tasks for Thought in Medicine

Happily these altitudes are as much beyond my theme as beyond my capacity, and I turn with relief to a humbler task. We shall probably all agree that medicine permits and calls for a great deal of practical thinking. The first topic that suggests itself as in some special need of sound and rational doctrine happens also to be the most elementary ; it is that of the fundamental definition of what precisely medicine and the work of the doctor are. We are much concerned nowadays about medical education and the designing of curricula. It would appear that fundamental to all such considerations should be clear conceptions of the nature of the subject itself. This is particularly necessary and a little difficult because the subject is a composite one, and considerations very relevant to one of its elements are apt to be confusing if inadvertently applied to another. The constituents of which medicine is made up are readily discernible: they are three—a practical art, an applied science, and an experimental science.

Medicine as a Practical Art

It is always readily agreed that medicine is an art. The indispensable task of defining precisely what that phrase means is, however, less frequently undertaken. Medicine is a practical art in the same sense as is the work of the farmer, the smith, or the joiner. When this primary stage of definition is reached it becomes clear that definite qualities and modes of activity must be possessed by this element in medicine. These are of great practical importance, and it is surprising that they have had little exact notice. Now that the prestige of science is so high the statement that a great part of medicine still retains the status of an art is often made with a note of apology. Nothing could be less justified by a realistic sense of cultural values. The method of the practical art was the first instrument forged by man for the subjugation of chaos. At the dawn of civilization the preservation of knowledge was far more important than its discovery. The accidental fruits of experience and the creations of genius could be saved from an infallible oblivion only by being preserved in the precepts and tradition of a practical art. The superlative need for preservation made the arts inherently conservative, for there was, and is, no unequivocal difference between the change that was progress and the change that was decay. New knowledge was therefore accepted as reluctantly as old custom was given up.

An art carries its possessions in precepts and rule of thumb which are applied to individual cases in the light of a trained judgement. It does not possess principles of general validity automatically applicable: that is the method of applied science. An art is taught first in precepts and rules, secondly in experience of its material, and thirdly—and most important—by example. The method of apprenticeship is thus the keynote of education in the practical arts, because it brings the pupil into familiar contact with his material and gives him the constant example of his teacher in the actual things he himself will ultimately have to do. English medical education has long been recognized as having a characteristic product. This quality, whether we regard it as good or bad, has been due to medicine being regarded as essentially a practical art, and to the consequent predominance of apprenticeship in some form as an educational method.

If we have grasped correctly the nature of the practical arts we shall be able to specify to some extent the attitude of mind and the kind of thinking necessary for the satisfactory practice of them. It is commonly said that one of the chief objects of medical education should be to make the student think scientifically. The saying is perhaps as good an example as could be found of the need in which medicine stands for the exercise of the critical mind. To think scientifically may be supposed to mean one of two things. First, it may signify the adoption of a general habit of thought induced in, and characteristic of, those who practise experimental science. Unfortunately, however, it is not possible to show that the scientific worker outside his job displays more wisdom, insight, and practical judgement than anyone else of the same general capacity. Secondly, to think scientifically may mean to use the kind of mental process necessary for the satisfactory pursuit of experimental science. The scientific worker among other qualities must have an especially severe standard of evidence and proof ; he must draw no conclusion that is not strictly justified by the evidence, and he must be content to leave in suspense any decision for which the materials are not quite complete. Now the last thing a doctor is free to do is to exercise the scientific suspense of judgement, and he scarcely ever makes a decision that is justifiable

on strictly scientific grounds. The advice to think scientifically would seem, therefore, to risk paralysing his judgement rather than activating it.

The truth appears to be that what the user of a practical art needs is less the strict and limited instrument of scientific method than what may be called a soundly cultivated judgement. This requirement is more difficult to specify and much more difficult to secure. Apart from inborn capacity, it seems to depend on familiarity with the material of the art, otherwise experience, and on a broad and sound general culture which, while including a proper awareness of science, is by no means limited to it. The ancient and honourable art of medicine is being increasingly and inevitably pressed on by applied science, and suffers as well from misunderstanding and loss of prestige. It remains, however, the backbone of medical practice and indispensable to mankind. There is therefore an especial need to-day that its characteristic mode of activity should be understood, and should not be confused with those of the other elements that make up the complex of medicine.

Medicine as Applied Science

The conversion of the practical arts into applied sciences is a characteristic and familiar process in modern civilization. The rate at which this change is going on is often the subject of enthusiastic and even excited comment. To the sober realist, however, it is clear that the rule of science in medicine is still not much more than strictly local and much qualified. The cases are very few in which general principles can be applied to the individual instance with the direct precision of an engineer designing a dynamo. The diagnosis and treatment of errors of refraction, certain cases of bacteriological and of chemical diagnosis, and others of physical diagnosis and treatment, with the dietetic deficiencies, make up the examples of nearly pure applied science. Elsewhere methods of precision must be very strictly subject to the art of medicine if they are not to become a mere snare. The affectation of scientific exactitude in circumstances where it has no meaning is perhaps the fallacy of method to which medicine is now most exposed. When we observe how fully the quack has assimilated the language of science it is easy to see the need for exact definitions lest we ourselves fall, with the worthiest intentions, into something not much better.

Medicine as an Experimental Science

When we turn to contemplate the element of experimental science in medicine, we find that the need for some effort of definition is not less than it is elsewhere. Experimental medicine, or, as it has been more conveniently named, clinical science, is at a stage when the clear recognition of it as an independent form of scientific activity—if such it really is—is peculiarly important. If it is a science capable of being pursued and developed as such, it is a competitor for support on equal terms with the other sciences, and occupies a field particularly likely to attract endowment.

Now it is often supposed that the case for the independence of clinical science is met by pointing out that the scientific element in medicine is merely applied physiology and applied pathology. From this not very recondite truth it is concluded that any further benefit to medicine from physiological and pathological discovery can come only from work done by professed physiologists and pathologists. This view seems to ignore the way in which the sciences are distributed and have come into being. Independent sciences have arisen in the past, not apparently according to whether people said they must or they must not, but through finding a natural field and doing good work in it. According to their fields of work the sciences can be divided in a broad and simplified way into two groups. There are what we may call the *general* sciences, such as physics and chemistry, by which phenomena of a certain *kind* are chosen for study. Then there are the sciences we may call *topical*, by which phenomena of a certain *distribution* are chosen for study. Belonging to the second group are such sciences as astronomy, meteorology, and geology. The fact that they could all be described as applied physics and chemistry does not in the least impair their continued independence. These sciences have readily assimilated new discoveries in physics and chemistry that were relevant to their work. They have, however, not been content merely to wait on progress in these sciences, but have been ready to undertake physical and chemical researches on their own account in problems presented by their material, and often with the happiest results. It is certain that meteorology and geology would not be in their present healthy state if they had not been prepared boldly to invade the realm of the physicist or chemist when occasion arose.

The analogy between the position of these disciplines and that of clinical science is close and instructive. Clinical science takes as its field the study of sick people, thus choosing a range of phenomena forming a natural group of the highest importance and interest, and no more arbitrary from the theoretical point of view than are those chosen by the meteorologist and geologist. The chief sciences that are general in the sense we have defined in regard to clinical science are physiology and pathology. While taking full advantage of any appropriate discovery in these sciences, it need no more wait on the advance of them than geology has waited on the advance of physics and chemistry, but is bound to undertake physiological and pathological researches of its own when they become relevant to its purpose. The art of medicine will long remain the chief implement of the practical doctor. Admirably adapted as it is for the conservation of knowledge it is in its very nature ill suited for the discovery of new truth. I venture, in conclusion, to recall a classical example of this fact and its consequences.

In 1745 James Lind described the cure of scurvy by lemon juice; and in 1840 Steinhaeuser, that of rickets by cod-liver oil. If these doctrines had been enunciated by teachers of great prestige they might have become accepted clinical precepts and slowly acquired empirical stability. They did not have that good fortune. In spite of the desperate urgency of the problem of scurvy in the eighteenth century, and that of rickets in the nineteenth, no proof or disproof was established, because it is not in the nature of a practical art to seek for certainty in the scientific sense. The truth remained undistinguished among the innumerable opinions current about these diseases for 150 years in one case and eighty years in the other. As late as the admirable *Encyclopaedia Britannica* of 1911, the most authoritative opinion inclined to ascribe rickets to an intestinal toxin and scurvy to an unknown microbe. The practical art of medicine alone knew the urgency of the problems, and actually for many years possessed the key to both. It was therefore in an extraordinarily favourable position for a direct attack on them. The method alone it, as an art, did not and could not possess. That belonged to physiology, which for long years had no interest in the problems, and approached them at last as it were indirectly and almost with reluctance. When the cause of scurvy was at last scientifically ascertained in the classical experiments of Holst and Fröhlich two circumstances of the discovery attract our notice. It was made 173 years after Bachstrom

had categorically and correctly announced the cause of scurvy and 162 years after Lind had described its cure, and it was made in the course of a research primarily undertaken for another purpose. It is difficult not to believe that an active clinical science, by its situation so favourably placed for a direct attack, could have saved some of these long and costly years.

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SOME ASPECTS OF INFANT FEEDING*

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To ensure that a baby will make normal progress it is necessary that it shall retain sufficient suitable food. If we concentrate our attention on suitability and on adequacy and on some examples of under-feeding and of over-feeding we shall find material for profitable discussion.

Suitability

The percentage composition of the feeding mixture is used extensively as the guide to the suitability of an artificial feeding. It would be wise to abandon this basis in favour of the caloric basis, to which a great deal of attention has been directed since 1925, when Grover Powers[1] published his stimulating paper. The distribution of the total calories between the basal components may be calculated readily by splitting the caloric value per ounce into fractions derived from carbohydrate, protein, and fat respectively. Each of these fractions can be expressed as a percentage of the whole. The number of calories out of a hundred derived respectively from each component forms the caloric basis, by means of which different feeding formulae may be compared. On this basis terms such as "high-protein diet" acquire a new and a better meaning.

In the "majority group" of Powers, which included most of the successful feeding formulae, "the percentage of the total calories in protein varies between 10 and 20 per cent., and in fat between 15 and 30 per cent."[2] I am of opinion that the lower limit for protein and the upper limit for fat are both strained, and I am able to state that when the percentage of the total calories in protein lies between 13 and 18, and, in fat, between 15 and 40, the mixtures prove safe and suitable for the vast majority of babies in Melbourne (16 per cent. from protein and 32 per cent. from fat are safe average proportions). In other words, one aims at a protein ratio by calories between 1 : 4½ and 1 : 7.

Provided that the fat percentage of the milk used lies between 2.5 and 4.5, these conditions will be fulfilled if 70 per cent. of the total calories comes from cow's milk and 30 per cent. from added sugar (Table I). Enough water must be added to bring the fluid intake up to two and a half ounces per pound of body weight per day in cold weather, and to three ounces per day in hot weather.[3]

* Read in opening a discussion in the Section of Diseases of Children at the Annual Meeting of the British Medical Association, Melbourne, 1935.

TABLE I.—*Feeding with Milk 70 per cent. and Sugar 30 per cent. of Total Calories*

Irrespective of the caloric intake or of added water, the distribution of each 100 calories will vary with the fat content as under. (Carbohydrate assumed to be constant at 5 per cent. and protein at 3.5 per cent.)

Percentage of Fat	Distribution of 100 Calories			Protein Ratio by Calories
	Carbohydrate	Protein	Fat	
2.5	54.70	17.20	28.10	4¼
3.0	52.78	15.91	31.21	5¼
3.5	51.31	14.82	33.87	5¾
4.0	49.91	13.85	36.23	6¼
4.5	48.70	13.02	38.28	6⅝
5.0	47.71	12.26	40.03	7⅛

The caloric value per ounce of the milk used will also vary with the fat content, and the number of ounces of milk to be used in a given case will be determined by dividing the number of calories to be supplied from milk by the caloric value per ounce of milk. In Table II will be found calculations of these variants.

TABLE II.—*Feeding with Milk 70 per cent. and Sugar 30 per cent. of Total Calories*

The effect of the varying fat percentage on the caloric value per ounce of milk, on the total carbohydrate percentage from milk and sugar, and on the caloric value per ounce of milk and sugar. Addition of water will make a proportional decrease in these figures.

Percentage of Fat	Caloric Value per ounce of Milk	Carbohydrate percentage of Milk and Sugar	Caloric Value per ounce of Milk and Sugar
2.5	16.57	11.12	23.71
3.0	17.91	11.62	25.63
3.5	19.24	12.11	27.54
4.0	20.57	12.60	29.45
4.5	21.91	13.09	31.35
5.0	23.24	13.60	33.28

Those who always like to know the percentage composition of the mixture used should note that there is a constant difference between the fat percentage (Col. 1) and the sugar percentage (Col. 3) of 8.6. Those who like to use a mixture of constant energy value per ounce can calculate the amount of added water required from Col. 4, the caloric value per ounce of milk and sugar. Those who prefer low-protein mixtures can dilute proportionally with water. If each of you will give this matter of the caloric basis of comparison your earnest thought in the light of its applicability to the system of feeding you practise, it is probable that we shall find in it a common ground for justifying the good results we each obtain, and also recognize that some of our pet principles are mere shibboleths.

We know that the biggest variable in cow's milk is the fat percentage, and for accurate feeding we should have a good idea of the fat content of the milk that is used. In every institution for babies it should be the custom to estimate the fat percentage daily. It may be of interest to refer to the method adopted at the Presbyterian Babies' Home, Melbourne. The milk arrives in five-gallon cans, and a sample is taken of the mixed milk for fat estimation; it is usually about 4 per cent., but may be 4.8 per cent. The bulk milk stands in a refrigerator, and after being undisturbed for three hours, if the estimation was 4 per cent., one pint is dipped off the top to reduce the fat percentage of the remainder to 3.5. A little more or a little less is removed according

to the sample estimation. The remainder is then tipped into a container with a tap, and pint bottles are filled with a 3.5 per cent. milk and are placed in the refrigerator. In a further three hours the pint bottles are skimmed according to requirements of individual babies. Table III shows the approximate fat composition of the remaining milk according to the amount of top milk dipped off. Special testing is carried out for premature babies or other special cases, and shows very slight variations from these results.

TABLE III.—*Results of Skimming Milk (Presbyterian Babies' Home)*

Milk standardized to contain 3.5 per cent. fat stands in pint bottles in a refrigerator, and the fat in the remaining milk varies with the amount of milk skimmed off as under.

Amount Skimmed	Fat Percentage of Remainder
1 oz.	3.1
2 oz.	2.9
3 oz.	2.8
4 oz.	2.7
5 oz.	2.6

When we are not able to get such estimations we must guess at the fat percentage of the milk. As 3.5 per cent. is the legal minimum it is too low a figure to use in average cases. I suggest that we should adopt the figure 4 per cent. for general use in our calculations instead of 3.5 per cent., and the figure 5 per cent. when the milk comes from a Jersey herd. It would be an advantage if milk intended for consumption by infants were standardized at approximately 4 per cent. Fat disturbances are prevalent, and one feels that on many occasions they are due to the difference between the actual and the calculated fat content of the feeding.

With modern methods of modifying protein by dilution and simmering, by desiccation or evaporation, by boiling and acidification, by boiling and the use of a whey diluent or a starch or gelatin (colloid) diluent, the older methods of citration, of pre-digestion, of extreme dilution, and of pasteurization in the home are being superseded, and protein damage is very rarely encountered. Though it is recognized that by the use of low-protein mixtures babies can be nurtured satisfactorily, the practice introduces an avoidable anxiety in the direction of excessive carbohydrate or of excessive fat feeding if the amount for the day is to prove adequate and still be within reasonable limits.

It is more difficult to achieve success with the extremes either of dilution or of concentration, and by steering a middle course and using mixtures of a caloric value a little less than that of human milk (say 18 calories per ounce) to ensure an adequate fluid intake, with a suitable distribution of the total calories and with well-modified protein, our main concern will then be adequacy and our problems will be under-feeding and over-feeding.

Adequacy of Diet

There are a number of systems in use for the estimation of adequacy,[4] but perhaps the calculation of the theoretical caloric requirement by the Truby King method,[5] combined with the theoretical fluid requirement, is of the greatest practical value. Whatever method we use we must realize that there are individual babies who need a little more and others who will flourish on a little less either all the time or at certain times. These theoretical calculations must be used as guides and not as absolute measurements.

In addition to accuracy in the measurement of the components of the feeding mixture and of the amount taken and retained by the baby, accurate weighing of the baby increases one's control over this important factor of adequacy. There should be, at every health centre, spare scales for loan in the homes for test feeding purposes. In passing one may note that although it is usual to assume that one ounce of breast milk has an energy value of twenty calories, it would be better for the baby if we used the figure nineteen in our calculations. (Average formula: protein 1.5 per cent., carbohydrate 7 per cent., fat 3.5 per cent.; calculated caloric value per ounce is 19.25.)

When a baby is being fed naturally and the question of adequacy arises, test feeding is necessary and should be made the basis of an opinion. The only way to know how much breast milk a baby has taken at a feeding is to weigh the baby accurately before and after. It is a common practice to carry out several isolated test feedings and compute from the figures the daily intake. This practice is fallacious because of the extraordinary variation we find in the amount a baby will take at different feedings. Further, as the daytime feedings are often much smaller than the early or late ones, we may be positively misled, and initiate artificial feeding unnecessarily. It is much more satisfactory to insist on twenty-four-hour test feeding either consecutively or periodically.

On the breast milk analogy and on repeated observations of the behaviour of babies in this respect, there is no need to apologize for advocating appetite-feeding—that is, that babies should be allowed to vary the amount taken at each feeding. It is often safer to advise regular administration of a fixed amount, but this advice is short of the ideal. When appetite-feeding is permitted, it is important to keep a record of the amount taken. One finds that the results substantiate the soundness of the theoretical caloric requirement and of the theoretical fluid requirement as guides to adequacy.

Some Problems of Under-feeding

PREVENTION OF EARLY LOSS OF WEIGHT

If a baby is under weight at birth an effort should be made to prevent or minimize initial loss of weight after birth. This is especially desirable after induction of labour for toxaemia, and for premature babies and small babies who are to be fed artificially because of maternal tuberculosis or diabetes. Early complementary feeding and initiation of the re-establishment procedure in the early days of lactation has been regarded as the method of choice for those babies who can be fed at the breast. The complementary feeding selected should be suitably balanced on the caloric basis, and the protein should be relatively high and extremely well modified. By gradation, satisfactory artificial feeding can be established if lactation fails in spite of our efforts. When breast-feeding is contraindicated, a suitable feeding mixture may be used from the outset. The use of a hydrating solution such as that suggested by Kugelmass[6] of New York in 1932 has interesting possibilities.

RE-ESTABLISHMENT OF FAILING LACTATION

During the early weeks of life it is highly desirable that close supervision of the baby's progress should be maintained, for, apart from congenital anomalies incompatible with life, such conditions as pyloric stenosis and pylorospasm may make their appearance, and, even when there is no physical basis for failure to thrive, unsuitability or inadequacy of the feeding may cause serious damage if unrecognized and uncorrected.

Early recognition of insufficiency of breast milk usually leads to rapid improvement when the re-establishment procedure is adopted promptly. When a number of weeks are allowed to pass without any action being taken there is a corresponding delay in re-establishment. When it is convenient for the mother, the mother and baby should be admitted to a special mothercraft institution for

re-establishment of failing lactation. These institutions are modelled on the famous Karitane Hospitals of New Zealand, and the procedure adopted is practically identical. Admission to an institution can be avoided if the mother is willing to carry out the procedure in a modified form in her own home with or without the assistance of a skilled nurse. Consecutive or periodic twenty-four-hour test feedings are used to measure the intake, and the complementary feeding should be given after the breast-feeding in unlimited but measured amount, preferably by spoon-feeding. The importance of complete emptying of at least one breast at each feeding must be stressed, and any milk that can be expressed should be given to the baby. As time goes on, as the amount of breast milk increases, the artificial feeding need be offered at fewer feedings each day, and, ultimately, in a successful case it will be discontinued.

The amount of expressed breast milk obtainable is an important index to the probability of successful re-establishment,[7] and in an ideal case no artificial feeding need be used. As much as 20 per cent. of the total breast milk may sometimes be expressed and used for complementary feeding.

MIXED FEEDING

When both human milk and an artificial feeding have to be used together over a long period it is extremely difficult to gauge the adequacy of the combined feeding. If too much artificial food is given the natural supply diminishes; if the complementary feeding is too small the baby will be underfed. If regular twenty-four-hour test feedings cannot be obtained the progress of the breast supply can be estimated approximately by measuring the amount of complementary food retained and the weight of the baby. If the baby is making normal progress the theoretical caloric requirement for that baby at that time may be assumed to be the total caloric intake. By subtracting from this figure the caloric value of the complementary feeding the caloric value of the breast-feeding is obtained. Division by nineteen yields the estimated number of ounces of breast milk per day. By this method comparisons may be made from week to week which influence the decisions to increase or decrease the amount of complementary feeding with the object of improving the yield of breast milk.

Every effort should be made to prevent a sudden cessation of breast-feeding because of the inevitable under-feeding which follows before adequate amounts of the artificial feeding can be administered safely.

NORMAL WEANING

On account of weaning, a baby should not lose weight. It is of great importance that all changes in the dietary of an infant should be made gradually; the transition should be smooth and progressive. Educational diet should be included at the appropriate time for breast-fed babies, just as it is for those fed artificially. Cow's milk should be included in the educational diet. It follows that complementary feeding should precede supplementary feeding in the process of normal weaning. The breast-fed baby should not be handicapped dietetically. The energy value of the substitute feeding (supplementary feeding) should be somewhat greater than that of the natural feeding it replaces, to compensate for the failure of lactation that supplementary feeding entails.

POWER OF RECOVERY AFTER UNDER-FEEDING

If something from below pulls a cork which is floating in the water, the cork will go under the surface temporarily. When it is released it will come to the surface and will float along again. The baby's weight is the cork and the age-weight line of growth is the surface. The unknown "something" may be any of the causes of loss of weight. When the cause of loss of weight is removed a baby should be expected to make rapid gains until the weight reaches the point indicated by a continuation of the original curve. If the weight does not return to the expected level, the cause of the depression is still acting, or serious damage has been done which has altered the metabolic rate.

The Victorian age-weight line of Scantlebury[8] has proved extremely useful as a standard for comparison in my studies. In the main, it can be stated that most of the babies tend to parallel it. Those under weight at birth, with the exception of premature babies, are likely to remain correspondingly below the average weight. Those over weight at birth should not be regarded as over-fat unless the weight line rises out of proportion. There are two qualifications to these generalizations. First, most babies grow rather more rapidly in the last quarter of the first year, and secondly, there is a fairly common type of curve in which the rise is steeper throughout the first year. This steeper curve may be recognized by the time the baby is 4 months old. The essential facts are that there is a definite line of growth for each baby, and that this rate of growth is independent of the feeding, provided that the latter is suitably balanced and the baby is not underfed.

A baby that is regarded as frail in the first month or two should be given a "trial by food." Offer him an unlimited amount of well-modified, well-balanced food, such as a mixture of equal parts by weight of sweetened and unsweetened condensed milk with added water. If he gains weight rapidly his frailness will soon disappear. The really frail baby will make much slower progress.

Over-feeding

The principle concerning over-feeding that emerges on close observation of the feeding of babies is that, without forcing the feedings, a baby will not take too much of one constituent except to get enough of another. On this theory over-feeding will not occur if we study the requirements of each baby carefully and yet allow his appetite to be the guide to the amount. Standardization of infant feeding is not ideal, but when it cannot be avoided it should be based on sound principles.

When the over-feeding occurs on a suitably balanced diet it is very likely to be due to insufficient intake of fluid. The baby will take too much solid food to get enough fluid. In such a case, fat seems to be the first ingredient to cause trouble. It is important that the early signs of fat disturbance should be recognized. Increasing difficulty in administration of the feeding on account of loss of appetite and consequent small weekly gain in weight should be taken as a warning to skim the milk more and to give more fluid. If this action is not taken, further loss of appetite and occasional vomiting will occur. If this is disregarded more vomiting and diarrhoea with loss of weight and definite illness will follow, and a considerable alteration in diet will be necessary. Over-feeding with fat is frequently due to the actual fat in the milk being so much higher than is allowed for in the calculations.

Instances of carbohydrate over-feeding are encountered frequently. The babies are often being fed with a weak milk dilution with a lot of added carbohydrate, or are on a patent feeding consisting largely of carbohydrate. They take far too much carbohydrate in order to get enough protein. The percentage composition of the mixture is a poor guide. It is useless to fix on an arbitrary figure such as 7 per cent. carbohydrate as the upper limit of safety; 8.5 per cent. can be given safely in an undiluted cow's milk mixture, and yet 6 per cent. may cause

anxiety in a mixture with two parts of milk to three parts of water. In the first example, only 43 per cent. of the total calories are derived from carbohydrate, but in the second the proportion is 57 per cent. Unquestionably, it is safer to use a higher percentage of carbohydrate in a less dilute milk mixture, and yet one frequently sees the contrary advocated. No doubt the reason for this is the desirability of increasing the caloric value per ounce of the weaker mixtures, but this reason is not valid when it can be shown that an important principle of balance and of safety is being violated.

When mechanically separated milk is used in infant feeding the fat may be reduced to 1 per cent., and the non-protein side of the feeding has to be augmented with added carbohydrate. If such a feeding is to be given in adequate amount there is a danger of a carbohydrate disturbance. In a case of this kind the use of whey as a diluent will increase the caloric value and lower the protein percentage without raising the carbohydrate, and less sugar will be required to preserve the balance between protein and non-protein in the mixture. Even then it would be safer to add lactic acid to secure greater modification of the protein and to raise the acidity of the stomach contents, which is usually too low in the cases of infantile dyspepsia in which the low fat milk would be indicated.

OVER-FEEDING WITH BREAST MILK

The same theory is applicable as a basis for the management of the examples of over-feeding with breast milk we sometimes encounter. The babies will be taking too much of one constituent to get enough of another. When the cause is excessive concentration of the breast milk, free administration of fluid to the mother and to the baby is all that is required if the milk is suitably balanced. It is not possible, however, to reduce the protein in human milk by cutting down the protein in the mother's diet, and the same applies to the other ingredients. The high milk fat yield of a Jersey cow and the low fat of a Frisian cannot be explained by a difference of diet. One usually advises a reduction in the sugar or in the fat intake in an attempt to correct breast milk abnormalities, but when the free administration of fluids is not successful, analysis of the breast milk should be insisted upon. A reduction in the time of feeding is one way of countering excess of fat, because the end-milk is richest in fat. The end-milk should be removed and discarded, or progressive failure of lactation will follow through incomplete emptying. If the carbohydrate is low a suitable spoon-feeding of lactose solution or some such high carbohydrate may be given as a complementary feeding. The same type of spoon-feeding will help to restore the balance if the protein is too high. Very occasionally, it will be better for the baby to be weaned early.

Conclusion and Summary

1. An approach to some of the problems of infant feeding has been made by discussing (1) suitability, and (2) adequacy.

2. The percentage distribution of the calories—the caloric basis—has many advantages over the percentage composition—the percentage basis—as a guide to balance, grading, and suitability.

3. When the percentage of the total calories in protein lies between 13 and 18 the mixtures prove safe and suitable for most Melbourne babies.

4. These conditions will be fulfilled if 70 per cent. of the total calories come from cow's milk and 30 per cent. from added sugar. Enough water must be added to cover the fluid requirement.

5. Concentration of artificial feedings to a caloric value per ounce of approximately eighteen calories is desirable to eliminate anxiety concerning the fluid requirement.

6. The caloric basis of comparison reveals an explanation of the reason for the success of apparently dissimilar feeding methods.

7. Difficulties arising from the variable nature of the fat percentage of cow's milk complicate infant feeding and require solution.

8. Appetite-feeding with reservations and under control is to be preferred to the administration of a fixed amount at each feeding.

9. In estimating the intake of breast milk, consecutive or periodical twenty-four-hour test feedings are much more reliable than are scattered test feedings.

10. An attempt should be made, in selected cases, to prevent the usual initial loss of weight after birth.

11. Early recognition of failing lactation and prompt attempt at re-establishment will prevent avoidable underfeeding.

12. On account of weaning, a baby should not lose weight. Cow's milk should be included in educational diet. Complementary feeding should precede supplementary feeding.

13. Frail babies should be given a "trial by food." There is a definite line of growth for each baby, which will be followed if the baby receives sufficient suitable food.

14. The principle concerning over-feeding is that a baby will not take too much of one constituent except to get enough of another.

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M. Gundel (*Deut. med. Woch.*, July 19th, 1935, p. 1145) draws attention to the great rise in the incidence of diphtheria in Germany during the last few years. The figures rose from 57,000 in 1931 to 74,000 in 1933, and to well over 100,000 in 1934. To judge by the notifications for the earlier months of 1935, the disease is still on the increase. Though the absolute number of deaths also shows a rise the mortality remains low in relation to the morbidity. Up to the beginning of 1934 little use was made of active immunization, because the public was indiscriminately hostile to inoculations on account of the Lübeck disaster, and because the medical authorities did not consider the evidence in favour of active immunization strong enough to warrant its wholesale employment. Recently, however, Professor Gundel, who is attached to the Robert Koch Institute for Infectious Diseases in Berlin, has undertaken wholesale immunization against diphtheria among some 400,000 children with one or other of the three preparations available in Germany—toxin-antitoxin-gemisch (T.A.), toxin-antitoxin-flocken (T.A.F.), and formol-toxoid (a serum-free, completely detoxicated preparation). All these preparations were given by subcutaneous injection. In a considerable proportion of cases, and on account of shortage of material for inoculation, each child had only one or two instead of three successive injections. The statistics the author produces show that the immunity conferred by only one or two injections was considerably inferior to that developed by the child receiving three injections. While the incidence of diphtheria among all the children immunized by one, two, or three injections was as 1 to 6.5 among the controls not immunized, this ratio was as 1 to 13 when only those children were considered who had each received three injections.

GAS ANAESTHESIA UNDER POSITIVE PRESSURE *

BY

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The advantages of gas anaesthesia under positive pressure are so often overlooked by anaesthetists that their recapitulation may be useful. At the same time little can be added to what has been said on the subject by the late E. I. McKesson, who may be regarded as the originator of the method.

With the standard gas-anaesthesia apparatus the gases are delivered to the patient at a pressure little above the atmospheric. In the positive-pressure technique, special apparatus is used by which the anaesthetic mixture may be delivered at any desired pressure, from 0 to 40 mm. Hg above the atmospheric, without alteration in its percentage composition. Two such machines are in use in Australia—namely, the McKesson apparatus and the Austox, its local imitation. Both possess a graduated dial which, when rotated, actuates a set of levers increasing the pressure of delivery to the desired extent. With both, the mask or inhaler must fit the face closely if the increased pressure is to be effective. It then remains only to increase the spring tension on the exhalation valve so that the gas shall not be uselessly dissipated, and to adjust the rebreather by a spring so that it shall not remain a distended and useless bag, but shall continue to close during inhalation and to expand during exhalation. Pressure anaesthesia will be very wasteful of gas if these adjustments be not accurately made.

It is now proposed to describe the circumstances under which the use of positive pressure is helpful and often imperative, and to illustrate them by some personal experiences.

Mask Anaesthesia

When gas is given by the mask method, it is desirable to do so under a pressure of 2–3 mm. Hg, thus facilitating free inhalation and aiding the diffusion of gases through the lung alveoli. This pressure may need to be increased to 7–10 mm. Hg or more under the following circumstances: (*a*) where the mask fits badly, so that gas shall escape through the gap rather than air enter by it and affect the plane of anaesthesia; (*b*) where respiration is shallow, as from shock or narcotic overdose; (*c*) where respiration is obstructed, as when the trachea is manipulated during thyroidectomy; (*d*) where the diffusion of gases through the lungs is imperfect, as in emphysematous patients. The improvement in the patient's condition when ineffective respiration is thus aided is often very marked.

Respiratory Arrest

In cases of respiratory depression or failure, pure oxygen may be delivered to the patient under pressure. In the McKesson apparatus it suffices to close the exhalation valve with the thumb and to press a button to release an instantaneous flow of oxygen under high pressure. The lungs are forcefully inflated, but cannot in practice be injured, because the mask will be blown out of contact with the face before harmful pressures are reached. Provided the circulation remains unimpaired the oxygen is rapidly absorbed and soon effective. Two or three such lung inflations, at intervals of about twenty seconds, will ordinarily overcome the respiratory depression of fourth-stage nitrous oxide anaesthesia, as the accompanying chart shows.

Before inflating the lungs with oxygen the anaesthetist must make sure that the respiratory depression be not due to presence of vomitus or foreign matter in the air passages. A case is reported from an Australian city in which, the patient becoming cyanotic, lung inflation was performed. The patient, however, became more deeply asphyxiated and died. Necropsy showed that the bronchial tree was full of vomitus, packed closely into it by the gaseous "vis a tergo." In such cases, before oxygen is insufflated, the head should be lowered, the pharynx cleaned, the larynx intubated, and the bronchial tree cleared by aspiration. Only in a grave emergency should any risk be taken. Thus, in a case of emergency surgery I encountered respiratory arrest due to vomiting of a full meal. Lowering the head and clearing the pharynx were of no avail. As facilities for intubation and aspiration were not at hand, the risk of trying to force oxygen past the obstruction was wittingly taken. Fortunately the cough reflex was thus soon restored and the foreign matter (mainly green peas) expelled without subsequent ill effects. The rule still holds, however, that lung inflation with oxygen should be avoided, if possible, in cases where foreign matter is present in the pharynx.

Endotracheal Anaesthesia

The standard wide-bore catheters for endotracheal gas anaesthesia seldom form a gastight fit in the glottis. If then, the supplementary packing be inefficient or inapplicable air or even blood may enter the gap. This may be obviated by the use of a pressure of 5–10 mm. Hg converting the potential air inlet into a gas escape. Flagging respiration may be assisted by the use of positive pressure in endotracheal as in mask anaesthesia, and I have found it of great assistance in combating the grave respiratory depression encountered in cerebral operations, especially in those upon the posterior cerebral fossa in patients suffering from high intracranial tension. Further, low-pressure endotracheal gas anaesthesia necessitates the use of a wide-bore catheter, so that an adequate passage may be provided for respiration. On two occasions I was unable to expose the larynx sufficiently for such a catheter to be inserted. A small gum-elastic catheter was accordingly used and anaesthesia maintained by insufflation at a pressure of 25 mm. Hg. The waste of gas was naturally great, but the alternative would have been the abandonment of gas anaesthesia had positive pressure not been available.

Open-mouth Operations

Major dental operations demand endotracheal anaesthesia, but minor procedures may be performed under gas anaesthesia nasally maintained, with the mouth packed securely. To ensure lung aeration, and to obviate mouth breathing around the pack, a pressure of about 10 mm. Hg is necessary. If the packing be inefficient, pressures of from 20 to 40 mm. Hg may be required. Hence, uniformly satisfactory results can only be secured by using apparatus capable of delivery at high pressures. I experienced a complete fiasco in the case of an ambulant patient, seen for the first time in a dentist's surgery. Her nose proved to be almost wholly obstructed, so that delivery at 40 mm. Hg, supplemented by the use of a mouth tube, failed to prevent gross mouth breathing. Anaesthesia could not be maintained long enough for the operation to be wholly completed.

* Read in opening a discussion in the Section of Pharmacology at the Annual Meeting of the British Medical Association, Melbourne, 1935.

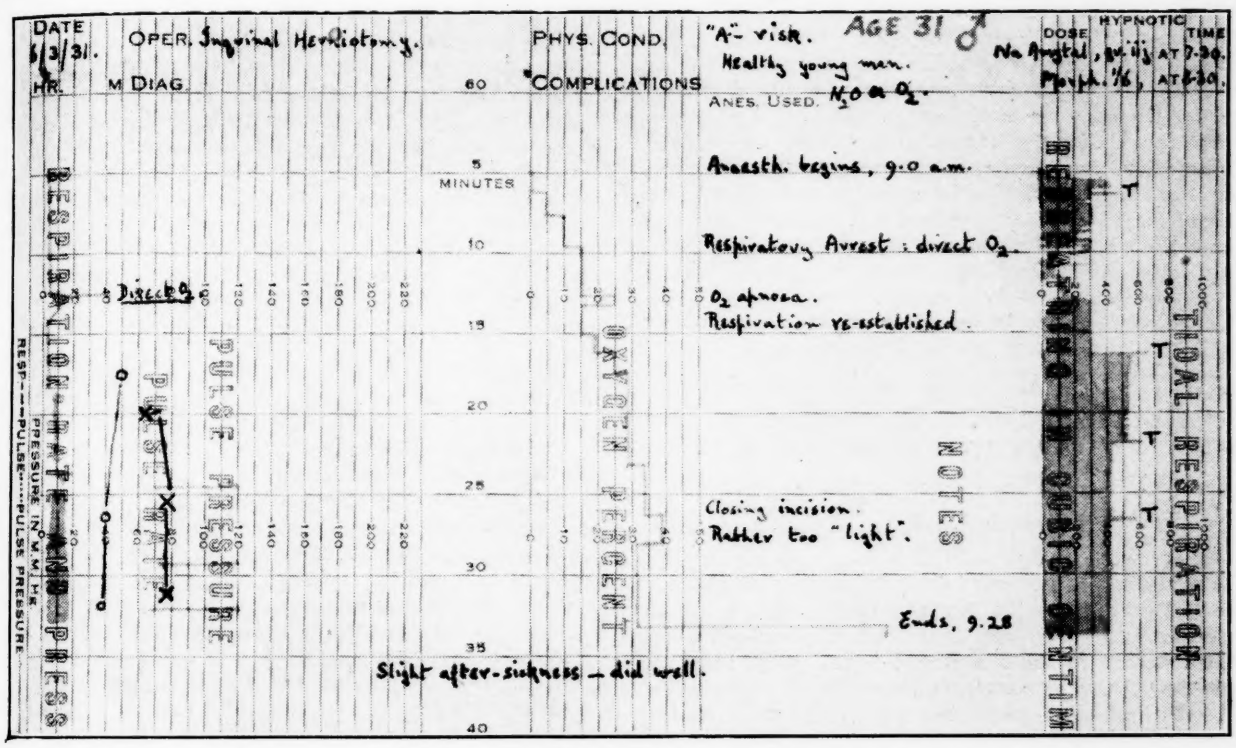
In nose and throat surgery it happens occasionally that an operation must be performed upon a patient in whom endotracheal anaesthesia is for some reason (for example, acute laryngitis) undesirable or inapplicable. Gas anaesthesia is then selected because of the possibility of quickly recalling the cough reflex under it, and is maintained by the nasal route under pressure. At the same time it must be remembered that the bronchial tree is unguarded, so the operation must be severely limited in scope and every care taken in regard to the posture of the patient and the thorough aspiration of the pharynx. I have been obliged to handle in this way two or three cases of pharyngeal abscess, surgical access having been impossible without an anaesthetic, and intubation of the larynx having been prevented by fear of rupturing the abscess and by gross swelling of the posterior pharyngeal wall. The patients were placed in the Trendelenburg position and anaesthetized by the nasal route under pressure. As soon as the mouth could be opened the abscess was incised and the pus aspirated; meanwhile the cough reflex was restored by administering oxygen. The risk of asphyxia or of inhalation of pus is, however, so great that the method should not be used where avoidable. One case nearly ended in tragedy.

The patient suffered from retropharyngeal abscess, oedema of the glottis, and dyspnoea; the last-named was less obvious when the gas-oxygen mixture was given at high pressure. On opening the mouth, however, the swollen tongue was forced back over the oedematous glottis and produced asphyxia. Incision of the abscess and aspiration of the pus was necessarily a rather deliberate procedure, and at its conclusion the patient was almost dead of asphyxia, needing to be revived by intubation of his larynx and insufflation of oxygen.

Thoracic Surgery

Modern thoracic surgery is rendered possible by two things—namely, the introduction of the non-toxic and non-irritating gaseous anaesthetics and the use of endotracheal anaesthesia, by which aeration of the blood may be secured even though one or both lungs be collapsed by the thoracic incision.

Patients for thoracic surgery usually present some disease condition which hinders the diffusion of gases through their lungs. Diffusion is further affected by collapse of the operated lung and by postural embarrassment of the sound lung. Administration of the anaesthetic at positive pressure will thus greatly aid oxygenation of the blood. For relatively minor procedures, such as rib section for empyema, administration by mask may suffice. For major operations, especially those upon the lung itself, endotracheal anaesthesia is desirable, preferably with two catheters, so that one may be used for aspiration of blood or pus from the bronchi. In either case positive pressure should be employed. It aids diffusion of gases through the sound lung and partially re-expands the collapsed one, making it absorptive of oxygen. By further increasing the pressure this lung may be brought up into the wound for inspection or "anchoring" by the surgeon. Bronchial fistula will be demonstrated by the escape of gas through them; indeed, the fistulous patient may be difficult to anaesthetize unless positive pressure be available to replace lost gas and to check inhalation of air through the fistula. At the end of operation the pressure is increased so as fully to expand the lung, thus expelling clot and exudate from the pleural cavity. The lung is kept expanded until gas-



Nitrous Oxide Overdose: Respiratory Arrest (McKesson "Nargraf" Record). The heavy black line on the extreme right indicates the volume of rebreathed anaesthetic; the short projecting spikes show the tidal lung capacity at those times. Respiration may be seen to become irregular and incomplete and finally to fail. Prompt recovery is shown after lung inflation with oxygen. The line in the centre of the chart indicates the oxygen concentration, which was increased after respiratory depression became evident. The horizontal lines each represent a reading of the blood pressure, the systolic value being shown by the extreme right-hand end of each line, and the diastolic by the left-hand end. The crossed line indicates pulse rate and the dotted line respiration rate. The interrupted line on the extreme left shows the pressure of delivery of the gas mixture. The sharp spike on it indicates the sudden rise of pressure beneath the mask during lung inflation with oxygen.

tight closure of the chest wall has been effected ; in this way post-operative pneumothorax may be lessened or even obviated.

Conclusion

Enough has been said to illustrate the many advantages of positive-pressure gas anaesthesia. A warning may now be given as to its pitfalls. Gases diffuse rapidly under pressure, and a slight alteration in the oxygen percentage in the anaesthetic mixture may be followed by a marked and rapid change in the plane of anaesthesia. The anaesthetist must therefore recognize the potency of his apparatus, must be thoroughly acquainted with the signs of gas anaesthesia, and must be ever vigilant. Without these safeguards he may find his positive-pressure apparatus a rather dangerous, precisely because a highly efficient, instrument.

Further, the convenience of nasal and pharyngeal insufflation of gaseous anaesthetics has led certain anaesthetists, particularly in America, where the pressure technique was evolved, to extend its routine use into questionable fields, such as nose and throat surgery. In such operations the best safeguard for respiratory function and for the integrity of the bronchial tree is endotracheal anaesthesia, and nasal or pharyngeal administration provides neither a safe nor an adequate substitute for it. Positive pressure is a valuable, and sometimes an essential, adjuvant to gas anaesthesia, but its application should be limited always by a due discretion.

ADVANCES IN OUR KNOWLEDGE OF HYDATID DISEASE DURING THE TWENTIETH CENTURY*

BY

HAROLD R. DEW, F.R.C.S.

Hydatid disease first came into prominence as an Australian medical problem in the 'sixties of last century. As time went on, and more and more patients harboured cysts which were both old enough and large enough to produce symptoms, the frequency with which the disease was recognized rapidly increased, and it reached its peak incidence in the 'nineties. The clinicians of this time had unrivalled opportunities for its clinical study, and as this period coincided with the rise of active medical schools and with great advances in general pathology and medicine, we find that they made full use of these opportunities. They met with hydatid disease in all its manifestations, and made numerous original observations as to its clinical aspects. In addition, the revolution in surgical procedures resulting from the introduction of Listerian methods brought more patients under direct observation and led to great advances in regard to treatment. The transactions of the various medical congresses of the latter part of the century, and the files of the local medical journals, show how carefully this disease was observed and discussed, and to the student of the subject are still of extreme interest.

In spite of their great experience, however, clinicians and pathologists were still puzzled over some of the manifestations of the disease. It is therefore of interest to review shortly the steps by which, during the next thirty years, nearly all the problems of immediate practical importance were solved. As each sectional advance is dealt with I propose to indicate briefly some of the problems which still await elucidation.

* Read in opening a discussion in the Section of Surgery at the Annual Meeting of the British Medical Association, Melbourne, 1935. The lecture was illustrated by lantern slides.

The Modern Period, 1900-35

All the essential aetiological factors—the close association of sheep, dogs, and men, at times living under primitive conditions—which led to the establishment of the disease in this country still exist ; but owing to dissemination of knowledge as to the life-history, to better education in hygienic matters generally, and to active public health propaganda the disease—although still relatively common—has much diminished in frequency. It has become recognized, as in all other countries, that the most common source of human infestation is direct contact with infected dogs, and that such factors as infected water supplies, raw vegetables, etc., are of little importance.[1] There is no doubt that the disease is readily preventable, and that it should be fairly easy to control, as the parasite can be attacked in various ways at different periods of its life-cycle. It should be possible to reduce the incidence still further, and no diminution of public health propaganda should be allowed.

We still require more accurate statistical studies of incidence and distribution, and it is hoped that the Hydatid Registry of the Royal Australasian College of Surgeons will provide these in the future. In addition, experimental work is needed to throw light on such problems as the survival of ova and scolices under natural conditions, while further information as to the distribution and control of the disease in animals and as to the relative importance of the various aetiological factors is also wanted.

General Pathological Advances

Advances in our knowledge of hydatid pathology have kept abreast of those made in other countries ; in this respect we are particularly indebted to observers in France and South America. The greatest single advance in our knowledge of the pathology of the disease came when Dévé first proved experimentally the fact that secondary echinococcal disease could occur.[2] He proved that germinal elements in the form of relatively differentiated scolices derived from a fertile primary cyst could, if shed into tissues, into serous cavities, or even into the blood stream, undergo a complete metamorphosis and become in their turn fertile secondary cysts. That this could happen had been tentatively suggested many years before, and had been strongly maintained by a number of Australian surgeons, who had ample opportunities for observing the dissemination of hydatid disease in operation scars and in the peritoneal cavity.[3] This possibility, however, had been scouted by most pathologists and helminthologists, as it seemed contrary to the rules laid down by van Beneden. The experimental work of Dévé, and later of others in Australia and South America, together with many clinical observations, abundantly proved, however, that this phenomenon was not only possible, but that it was relatively common. Recognition of this fact revolutionized our ideas about hydatid pathology, and explained many things which had hitherto seemed inexplicable. It led at once to an understanding of the difference between primary and secondary cysts, of the nature of recurrent cysts, of multiple cysts of the serous cavities and elsewhere, and of the very interesting metastatic cysts. As a result, too, it led to important modifications of the method of treatment. Another important addition to our knowledge has been a more complete understanding of the histogenesis of the parasite and its study in all stages of its development. This has led to an appreciation of its peculiar structure, its mode of growth, and its diverse pathological appearances in both man and animals. The phenomenon of daughter cyst formation and the pathology of the peculiar forms found in animals has also received much attention, although there are some interesting points, mainly of academic interest, still to be decided.[4] It is

now well established, too, that in the great majority of cases infestation takes place in childhood, the period of relatively unhygienic habits, and that, owing to very slow growth, the cyst often does not make its presence felt until adult life is reached. This led to the important corollary that the average cyst, even in the adult, is almost as old as the patient harbouring it. That these views are correct is borne out by many correlated pathological and clinical observations, and as a result many of our conceptions of the pathology of the disease have undergone great changes.

In addition, the increased care taken in the investigation of necropsy material, as a result of the rise of active schools of pathology, led to more accurate observations on the protean pathological manifestations of the disease. These will be referred to shortly, when the disease as it affects special organs is considered.

A most important event was the recording by me in 1931 of the first case of alveolar hydatid disease occurring in Australia. This case has been fully recorded elsewhere, and must be regarded as one of the world's classical cases, because it has completely negatived the geographical argument which has been for many years the main argument of the protagonists of the dualist school.[5] The supporters of this school have always maintained that alveolar hydatid disease was due to a specific parasite distinct from that causing the common form. The full story of the interesting controversy between the two schools, which is still being carried on between Dévé of Rouen and Posselt of Innsbruck, can be read in various pathological and surgical journals.[6]

Another important clinico-pathological advance has been the recognition of the anaphylactic nature of many symptoms in hydatid disease. It has been gradually realized that this is a relatively common phenomenon.

Pathology of Special Organs

When the pathology of the disease in special organs or sites is considered it is found that in about three-quarters of the cases it is only the onset of some complication, nearly always some leakage from the cyst, which produces symptoms that force the patient to seek medical advice. The importance of both mechanical and infective factors in these complications has been recognized, and their effects separated from each other in many cases. As a result there has come a better understanding of the protean clinical manifestations of the disease, some of which puzzled our predecessors.

In the liver the frequency of multiple primary cysts and the frequency of intrabiliary rupture have been accepted. The latter, which in its symptomatology so resembles cholelithiasis, is probably the commonest serious complication of hepatic hydatid seen. In that it is often the precursor of suppuration in the cyst or of infective cholangitis, it is also fraught with great danger to the patient.

The pathology and clinical aspects of intrathoracic extension of subdiaphragmatic hepatic cysts have also been elucidated, and we are now alive to all their clinical and pathological vagaries. The pathological possibilities of intraperitoneal rupture of an hepatic cyst, too, are now fully understood, and this has enabled us to comprehend completely the nature of peritoneal and pelvic hydatid disease. In the lung the frequency of intrabronchial and intrapleural rupture and their protean pathological complications are also appreciated, and, as a result, the indications for, and methods of, surgical therapy have been standardized.

The whole story of cardiac hydatid disease and its relationship to secondary metastatic cysts has been fully worked out, and, thanks to many accurately correlated post-mortem and clinical observations, we probably know more about cysts in this situation than in any other. Hydatid disease of bone, with its peculiar structure, has also been fully studied and correlated with the other peculiar forms of the disease.

We still require, however, more information about the rate of growth of cysts, fuller figures concerning the relative distribution of primary cysts in young subjects, and more information about the incidence and nature of the various complications. It is possible that further experimental work may elucidate some of the problems of the exact route of infestation, while experimental work on artificially infected animals may throw light on the more academic problems of growth and the occurrence of parasitic variations. Particularly is it important to look for abnormal pathological forms, which may be examples of parasitic variation or transitional types.

Diagnosis

Following a better understanding of the protean pathological manifestations of the disease clinical methods improved, but it was soon realized that, in spite of the great legacy of knowledge handed down to us by the earlier clinicians, diagnosis still lagged behind somewhat. The first great advance was the advent of radiography, which, owing to the fact that the intact cyst with a high saline content throws a relatively dense shadow, revolutionized the diagnosis of pulmonary, subdiaphragmatic, calcareous, and osseous hydatid. We are greatly indebted to Australian radiographers for many original and important observations. We still need fuller observations on the rate of growth of hydatid cysts, and we look to them to supply this information.

The next advance was the introduction of various immunological tests: first the precipitin reaction, then the complement-fixation, and, later, the intradermal test of Casoni.[7] All here present know how the introduction and careful study of these reactions have helped the clinician towards a more accurate diagnosis of the disease. It is hoped that work on these very interesting immunity reactions will continue. We still need more information as to their relative values and their fallacies, and it is possible that further experimental work may throw light upon these.

Treatment

Australian surgeons have played a great part in the development of radical surgical methods in the treatment of hydatid disease, and the files of our journals and hospital records contain many cases which illustrate the gradual development of standardized methods. The introduction of formalinization has made the management of simple cysts efficient and safe, but the time-honoured methods of marsupialization or open drainage still remain the methods of choice in many—particularly in the infected—cases. The old controversy between the protagonists of closure and drainage has more or less died down, each case being treated on its merits by one or other method.

Although our improved knowledge of pathological processes and possible complications has led to a better understanding of the correct surgical procedure, there still remain some problems about which opinions differ. The problem of the deep-seated pulmonary cyst which has become infected is an important one. The value of two-stage operations in single pulmonary cysts is another, while the management of simple cerebral cysts introduces difficulties of its own. The question of the propriety of exploring the common duct in all cases of intrabiliary rupture will always be a difficult one—and we still require

more accurate observations on this type of case. In the case of multiple secondary cysts, too, the surgeon is often faced with an apparently insoluble problem, and it is possible that we may have to wait for the discovery of some method of general intravenous therapy before we achieve complete success in their management.

Conclusion

In conclusion, I would urge that, although we have learnt a great deal about the disease, although we probably know as much about its behaviour, its clinical manifestations, and its treatment as any other disease we meet with, it would be wrong for us to become complacent and not to continue making observations and experimenting to still further elucidate problems which, although they may appear somewhat academic, may become in reality of great practical importance. In this country of Australia we all have unrivalled opportunities to investigate this disease, both in man and in animals, and it is our duty to contribute our share to future advances in its study.

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AGRANULOCYTOSIS WITH PURPURA HAEMORRHAGICA FOLLOWING GOLD THERAPY

WITH A NOTE ON PREVENTION OF COMPLICATIONS

BY

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The value of gold salts as a therapeutic measure in infective diseases such as pulmonary tuberculosis and rheumatoid arthritis is now well recognized. Complications arising from its employment are, as a rule, of a comparatively mild nature. In the course of a large experience of its use in pulmonary tuberculosis, and also of a smaller experience in rheumatoid arthritis, we have observed only one serious and fatal case, which we feel justified in reporting in view of several cases of agranulocytosis which have recently been recorded in the English literature.

Emile-Weil and Bousser,[8] in their review of the blood dyscrasias due to gold which had appeared in the literature up to 1932, found thirty cases in all. As such a large number of cases have been treated with gold since its inception they consider that the percentage of these accidents must be very small. On the other hand, Hartfall and Garland,[14] in a series of 100 cases of rheumatoid arthritis treated with crisalbine, had three deaths. One was due to agranulocytosis, and the other two to purpura haemorrhagica.

Case Record

The following is the history of a case of agranulocytosis with purpura haemorrhagica which came under our care.

History.—The patient, a woman aged 61, had suffered from rheumatoid arthritis of an advanced degree for nineteen years. The fingers, elbows, ankles, knees, sterno-clavicular, and jaw joints were all involved in the arthritic process. There was partial ankylosis of the knee- and elbow-joints. *X*-ray of the knees showed extensive arthritic change of the rheumatoid type in both joints. The blood sedimentation rate was 24 mm. in the first hour by the Westergren method.

Treatment.—The patient was given solganol B oleosum intramuscularly in weekly doses of 0.01, 0.05, 0.1, and 0.2 gram, the latter dosage being continued until 2.5 grams had been given. The joint condition had now shown marked improvement, and the sedimentation rate was down to 9 mm. After four weeks' rest a second course was started. It was only after the fifth injection of the second course that a faint erythematous rash was observed. The sedimentation rate had by this time risen to 16 mm., and the leucocyte count, which had hitherto been normal, was found to be 3,100 per c.mm. The differential white cell count (Dr. Eidinow) was: polymorphonuclears, 27 per cent.; lymphocytes, 69 per cent.; hyaline cells, 2 per cent.; eosinophils, 1 per cent.; myelocytes, 1 per cent.

A week later an extensive purpuric eruption appeared on the trunk, limbs, and buccal mucous membrane. There was a large haemorrhagic bulla on the sole of one foot, and the patient had epistaxis and slight haemoptysis. The temperature was now 100.6° F. She had previously been afebrile. The liver and spleen were not enlarged. The bleeding time was ten minutes. The leucocyte count was now 1,100 per c.mm., and the differential count was: polymorphs, 10 per cent.; lymphocytes, 87 per cent.; hyalines, 3 per cent.; eosinophils, 0 per cent. (Dr. Eidinow).

On admission to Battersea General Hospital under one of us (Ph. E.) the blood findings obtained by Dr. A. H. Haler were as follows: erythrocytes, 2,500,000; haemoglobin, 56 per cent.; colour index, 1.13; leucocytes, 800; polymorphs, 7 per cent.; hyalines, 1 per cent.; Türck cells, 1 per cent; lymphocytes, 90 per cent.

There was some anisocytosis, slight poikilocytosis, no nucleated red cells, and no punctate basophilia; platelets were 70,000; mean cell diameter, 7.20 μ.

Progress.—Calcium gluconate and pentose nucleotide were administered, and a blood transfusion of 250 c.cm. given. Coagulen "ciba" was also given. Some definite improvement occurred after the blood transfusion, but late the same evening the patient died somewhat suddenly. A post-mortem examination was performed by Sir Bernard Spilsbury, to whom we are indebted for the report quoted below.

Post-mortem Report.—"External examination reveals oedema of the lumbar region and of the backs of the thighs. There are haemorrhages in the left conjunctiva, extensive into and above the upper lip, especially on the left side, and in the skin from the angles of the mouth down to the lower jaw. There are a few petechiae in the skin of the face, and others scattered over the front of the chest and abdomen, rather more on the arms, and numerous on the wrists and hands. There are a few on the thighs, more on the legs, very numerous on the feet, especially the left foot, close to the base of the toes. There is haemorrhage into the skin of the

whole of the right buttock, extending over the anterior abdominal wall. Internal examination shows the pericardial cavity obliterated by old and fine adhesions. Several small haemorrhages are present in the back of the ventricle, and a large area on the surface of the right auricle The size of the heart and its cavities is normal. The heart muscle is pale, with numerous haemorrhages in the myocardium, and microscopically some brown atrophy. There is some old thickening of the mitral valve and slight atheroma of the lower end of the aorta. The coronary arteries are normal. The air passages are congested, and contain a little blood-stained mucus. Numerous large petechiae are present in the mucous membrane of the lower part of the larynx and trachea. Old pleural adhesions extend round the whole of the right lung and the greater part of the left. The lung shows general emphysema and some chronic bronchitis. The backs and the bases are congested. Old adhesions extend round the whole of the liver and spleen, and there are some pelvic adhesions, chiefly between the uterus and the rectum. The liver is pale: fine fatty degeneration of the liver cells has occurred in the centre of the lobules, microscopically. The spleen is normal. The kidneys are rather small, there being a slight arteriosclerotic change. The bladder shows numerous haemorrhages in the mucous membrane. Much urine is present, apparently free from blood. The suprarenals and pancreas are normal. The tongue is furred and bruised at the tip, the tonsils healthy, the stomach containing some bile-stained fluid but no food. Numerous haemorrhages are seen in the mucous membrane at the pyloric end, and large subserous haemorrhages at the cardiac end in front. The small intestine is stained red, but no disease is apparent, and there is no blood in the contents. Numerous small haemorrhages are present in the mucous membrane of the large intestine, becoming very numerous in the lower part. The uterus is drawn to the left by adhesions and is rather small in size. A tiny cervical polyp projects from the external os and another one in the lower part of the fundus. The ovaries are atrophied. A fair amount of subdural haemorrhage is seen round the occipital lobes, especially on the left side, and some round the left lobe of the cerebellum."

Complications of Gold Therapy

These may be divided up into effects on (1) the skin, (2) the mucous membrane, (3) the liver and kidneys, and (4) the haemopoietic system. We would emphasize that apart from a few cases of degenerative hepatitis gold accidents have only proved fatal when the haemopoietic system has been involved. Émile-Weil and Bousser divide the latter up into: purpura simplex, which is not fatal; purpura haemorrhagica, which is frequently fatal; isolated haemorrhages, which are not fatal; and agranulocytosis and aplastic anaemia, which nearly always cause death. A few cases of purpura combined with agranulocytosis (apart from the case here outlined) have been previously reported on the Continent. Angéras and Ginsbourg[1] record a fatal case in a girl of 19 suffering from pulmonary tuberculosis: she was commencing her second course of crisalbine; no eosinophilia was present. Another fatal case is reported by Achard, Coste, and Cahen[3]: the patient was a woman, aged 48, who had had 4.85 grams of solganol B in doses of 0.25 gram; death was stated to be due to meningeal haemorrhage.

As regards the causation of toxic manifestations, Émile-Weil and Bousser[7] consider them due to a sensitivity to gold. Among four cases of purpura or haemorrhage in which they tried special intradermal and cutaneous tests with gold three were positive. In support of this view Hudson[15] points out that many of the cases occurred soon after the commencement of the second course. Others have suggested that they may be due to rapid absorption of pathological products, possibly of the histamine or peptone type.[1 11] They are certainly not due to poisoning by gold. Feldt[10] points out that animals killed by large doses of gold do not develop these phenomena, but die of respiratory and vasomotor paralysis. Purpura combined with agranulocytosis has evidently a very serious prognosis, as all three cases so far reported have proved fatal. McCarthy and Wilson,[17] who have reviewed the blood dyscrasias following arsphenamine injections, find a mortality of 14 per cent. in purpura with agranulocytosis. They state that the prognosis depends on the extent to which the granulocytes are reduced.

The most effective treatment of agranulocytosis is blood transfusions repeated as often as is found necessary. Subcutaneous injections of blood have also been used, and adrenaline and liver by mouth.[9] Intravenous glucose,[15] hyposulphite of sodium or magnesium,[8] and sodium nucleinate[3] are also recommended.

Prevention of Complications

Before starting gold therapy the patient should always be questioned with regard to a personal or family history of purpura or bleeding. Gold salts should not be given to cases with such a history.[8] They should likewise not be given following substances which affect the bone marrow, such as thorium.[2] Blood counts should be carried out frequently during the treatment (at least once a month) in order to detect an incipient agranulocytosis, aplastic anaemia, or thrombocytopenia. We cannot over-emphasize the necessity for this in the gold treatment of rheumatoid arthritis. If the eosinophil count rises above 5 per cent. the injections should be temporarily discontinued.[6 16]

The importance to be attached to an erythematous or papular rash is rather doubtful. Forrestier[12] considered that it was not a contraindication to further injections; Freund and others have also expressed this view.[13 11] Dameshek,[5] who had reported a case of aplastic anaemia in a patient who had previously had erythema and desquamation, advises that this should be considered a sign for the utmost caution. Although we have examined the reports of seventeen cases occurring in the literature, we have only found one in which a preliminary erythema had been noted. Nevertheless, as erythema is a sign of intolerance to gold, we have adopted the practice of always stopping the injections when it occurs. On recommencing, half the previous dose is employed.

Summary

A fatal case of purpura haemorrhagica with agranulocytosis following gold injections is reported. The prophylaxis and treatment of such cases is discussed. The necessity for frequent haematological studies is emphasized.

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The British Institute of Philosophy has issued its programme of meetings to be held between October 15th, 1935, and May 7th, 1936. Addresses will be given by Sir Herbert Samuel, the Rev. Dr. Inge, Mr. C. E. M. Joad, the Dean of St. Paul's, Mr. H. A. L. Fisher, Professor Gilbert Murray, and Professor Ernest Barker. A syllabus can be obtained from the Director of Studies at University Hall, 14, Gordon Square, W.C.1.

Clinical Memoranda

Melanoma of the Choroid with Secondary Deposits in Liver

From the point of view of diagnosis and of clinical interest the following case would appear to be sufficiently uncommon to be placed on record.

Case Report

A male, aged 52, a surveyor of buildings, was seen in consultation with Dr. J. Watkin Edwards of Anerley, S.E.20, on March 30th, 1935. Patient's history: life teetotaller; pipe smoker to excess; in 1929 he sustained a blow from a tennis ball in the left eye, and in 1931 a fall from a ladder causing injury to his back.

Clinical Examination.—The patient, who was in bed, looked thin and ill (he stated he had felt well until a week previously). The left orbital cavity was empty. There was redness over the malar bones; the rest of the face was very slightly jaundiced, the right conjunctiva being tinged more deeply. Mouth: dry; sordes of the lips; posterior half of the tongue heavily coated; throat dull red and granular. Chest: thin and flat. Heart: enlarged to the left, apex beat being in the sixth left space 12.5 cm. to the left of the median line; systolic murmur of mitral insufficiency replaced the first sound. Arterial pressure, 148/70; pulse rate, 90 and soft; respirations, 22; temperature not raised. Abdominal wall convex by reason of a large, hard, smooth mass, with defined margin, occupying the anterior part of the abdominal cavity except the left iliac region. A dome-shaped smooth projection approximately 12 cm. in diameter was visible in the epigastrium and felt to be continuous with the large mass. Moderate oedema was present in the lower limbs.

Diagnosis.—The opinion given at the consultation was that the mass was constituted by a liver greatly enlarged, probably as a result of malignant disease secondary to primary growth elsewhere, the absence of the left eyeball removed by operation being suggestive of a primary melanotic sarcoma in this situation. The correctness of the diagnosis was amply proved by the following data received subsequently. Early in 1930 the patient noticed that the field of vision in the left eye was becoming smaller. Three months later he was told by a specialist that this was due to retinal detachment. Eight months later there was total blindness in the left eye. In 1931 a small pigmented spot appeared on the left conjunctiva and gradually increased in size. In July, 1933, there was pain in the eye, and after evisceration of the left orbit at Moorfields the patient was transferred to the Middlesex Hospital (August 28th, 1933), where he received twenty hours' intermittent treatment with a surface application of radium.

Laboratory Tests.—The following are the results of laboratory tests performed by Dr. Dennis Embleton on March 3rd, 1935. Urine analysis: specific gravity 1017; acid; trace of protein; urea, 2.3 per cent., bile present; urobilin in excess. Blood examination: Van den Bergh direct and indirect reactions, positive; red cells, 5,140,000 per c.mm.; haemoglobin, 90 per cent.; colour index, 0.9; white cells, 12,600 per c.mm. Differential blood count: lymphocytes, 5 per cent., large mononuclears, 6.33; polymorphonuclears, 88.66; slight vacuolation; no anisocytosis, poikilocytosis, polychromasia, nucleated red cells or abnormal white cells seen, but numerous reticulocytes. By April 3rd, 1935, the blood picture had shown progressive deterioration: red cells, 3,960,000 per c.mm.; haemoglobin, 84 per cent.; colour index, 1+; white cells, 17,500 per c.mm. Differental count: lymphocytes, 3.66 per cent.; large mononuclears, 2.33; polymorphs, 94, showing dark basic granules; numerous platelets; remainder of picture as before. Arneth index showed considerable shift to the left.

Post-mortem Findings.—The patient died on April 4th. The following are notes of the findings at the necropsy, performed by Dr. Temple Grey on April 9th. Skull and brain, normal. Heart: flabby and toneless; advanced fatty infiltration; valves competent; coronary arteries healthy. Lungs: oedema only, no adhesions. Kidneys: chronic toxic changes. Liver: weight 13 lb. 4 oz.; typical secondary melanotic sarcoma and cirrhosis, rounded mass in upper part of liver composed mainly of new growth. Spleen and pancreas, normal; stomach, atonic; intestines, normal; bladder, dilated, containing 6 oz. concentrated urine; thyroid, three times the normal size, cystic on right side; adrenals, icteric; pituitary, normal. At the inquest Dr. Temple Grey stated that death was due to secondary melanotic sarcoma, probably due to a primary growth in the left eye.

The histopathological report by Dr. Dennis Embleton on April 16th stated that sections of the liver showed a typical melanotic sarcoma (melanoma). There were considerable post-mortem changes in the thyroid and kidney. The kidney was somewhat necrotic; neither showed secondary deposits.

Discussion

The rounded mass in the upper part of the liver was mainly composed of large secondary deposits; elsewhere metastases varied in size, but all were small, containing melanin, a blood-borne iron-free pigment. Noteworthy points are: (1) the latent period between the appearance of the primary growth in 1931 and of metastases in 1935; (2) the large size and smooth surface of the liver; (3) the absence of pain; (4) the ascites and jaundice from pressure on the portal vein and bile ducts; and (5) the oedema of the legs from compression of the inferior vena cava.

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Respiratory Symptoms from Sea-water Inhalation

As I cannot find any mention in the textbooks of the condition described here I should be interested to know if it is of common occurrence in cases of partial drowning, and if there is any explanation of the symptoms other than that given below.

On July 6th, 1935, at 3.20 a.m., the surgeon lieutenant (myself) and two stokers were immersed in the sea for from four to five minutes, and inhaled fairly considerable quantities of sea water. At 9 a.m. the same morning both stokers reported at the sick bay with practically identical symptoms. Each complained of shivering, pains in the back and chest, slight cough, and feeling generally ill. Each had coughed up small quantities of sea water during the night, and each had a temperature of 101° F. The pains in the chest were not well localized; they were increased by deep breathing, and were similar in character to, but not so cutting as, the pains of acute pleurisy. On examination no abnormal physical signs could be found in the chest or elsewhere. The pain was unaffected by palpation or active movement of the muscles of the chest. There was no coryza, and no sore throat. At noon the same day I myself turned in with exactly the same symptoms and a temperature of 100.5°. On July 7th both ratings were very much better, their temperature being 98.8° and 98.6° respectively. Pain in the chest was still present on deep breathing, but it was not so severe as on the preceding day. Again I could find no abnormal physical signs in the chest of either of them. In my own case the pain was diminished, but my midday temperature was 100.2°. On July 8th both the stokers were free from symptoms, felt well, and were discharged to duty. I, too, felt perfectly well and had no temperature. The only treatment given was rest in bed, aspirin, and aperients.

The interesting points are that there was never any evidence of upper respiratory tract infection, none of us was in the water more than five minutes, the sea was warm (70° F.), and dry changes of clothing were obtained immediately upon coming on board. The only obvious explanation of the pain and temperature appears to be that the absorption of brine from the lung tissues is attended with a certain amount of local irritation and constitutional disturbance, and that as soon as this absorption is complete the symptoms vanish.

Eric James, Surgeon Lieutenant,
Simonstown, South Africa. H.M.S. *Milford*.

Reviews

CHRONIC RHEUMATIC DISEASES

The first report of the committee appointed by the Royal College of Physicians of London to co-ordinate work in this country on chronic rheumatic diseases has been awaited with considerable interest.[1] It has been somewhat of a reproach that Great Britain had no central organization engaged on this important medical and social problem, and the present committee intends to work in close conjunction with the Ligue Internationale contre le Rhumatisme. The first problem facing the compilers of this report was that of classification and nomenclature, for American, Continental, and British workers have all had different names for more or less the same disease groups, though confusion has arisen from overlapping of certain "borderline" types. The Nomenclature Committee, under the chairmanship of Mr. Timbrell Fisher, has retained the time-honoured English terms "rheumatoid" and "osteoarthritic," but has wisely applied these to types of arthritic manifestations rather than trying to fasten them on to too definite syndromes. Within these wide headings they have evolved a more detailed and exact grouping of the different varieties of "rheumatic" manifestations. This arrangement has met with the approval and cordial support of the American Committee on Rheumatism.

A series of original articles forms the second part of the volume. Dr. Freeman contributes a somewhat iconoclastic but refreshing paper on allergy and rheumatism. He uses 90 per cent. of his space in proving that there is no satisfactory definition of either rheumatism or allergy, but suggests that rheumatic reactions may be due to a hypersensitivity of certain tissues to bacterial toxins. He makes the interesting observation that all infections produce "rheumatic" pains of some sort, but that only those which do not have a specific effect on organs other than the muscles and joints are called "rheumatism." Dr. Miller describes experiments on hepatic efficiency in rheumatic disease, using the laevulose test, and finds signs of impairment of liver function in about a third of his cases. Mr. Race reviews recent work in biochemistry and the result of his own work at the Devonshire Hospital. The sedimentation test holds out promise of being really useful in diagnosis, prognosis, and estimation of the effect of treatment. If most of the other investigations are somewhat inconclusive they show that there is room for much work to be done in this field.

Sir William Willcox contributes an article on the very well worn theme of focal sepsis. So many people have so many foci of infection that it is always possible to find such foci and remove them. The circular argument runs somewhat as follows: If improvement does not occur the foci which have been removed have not been the right ones, and more and still more must be sought for and, if possible, dealt with; and if improvement does not then occur the focus is in the bowel, which unfortunately cannot be removed in its entirety; hence it is easy to prove, at least to the satisfaction of true believers, that these diseases, and perhaps all diseases, are due to focal infection. Sir William gives warning that care must be exercised as to how and when such foci should be removed, and while all will agree with such warning, and indeed acknowledge the important role of focal sepsis in rheumatic diseases, few will follow him in his thesis of the exclusive importance of this factor in the protean manifestations of the undoubtedly different disease processes included within this motley group.

Dr. Buckley has rewritten and brought up to date his previously published work on ankylosing spondylitis. This is of the greatest value in clarifying a very definite syndrome which has been confused by a series of Continental phrases, each describing slight variations of what is clearly, thanks to Dr. Buckley's work, a single pathological entity. Dr. Moncrieff discusses the recent literature on chronic arthritis of children, mentioning those due to specific infections. He refers to Still's disease and its possible association with tuberculosis, but does not commit himself to a decision whether it is a rheumatoid arthritis presenting special features of reaction depending on the age of the patient, as is the belief of many authorities. He also refers to the crippling and ankylosing arthritis of children, considered by some to be due to overaction of the parathyroids and curable by removal, or partial removal, of these glands. It is clear that a good deal of confusion and disagreement still exists as to the diagnosis, prognosis, and treatment of arthritis in children. Dr. W. S. C. Copeman discusses the treatment of rheumatic affections, especially myalgia, by histamine. This substance apparently acts as a vaso-dilator, and Deutsch recommends that it should be given by ionization, since it is retained longest (and therefore acts most continuously on the subjacent muscle) in the subcutaneous tissue. This treatment not only gives relief, but seems in some cases to have curative value, and is certainly worthy of more extended trial.

Finally a section is given to a critical review of the more important items of the world's rheumatic literature during the past year, Mr. Timbrell Fisher's article on pathology being particularly clear and convincing, and a complete bibliography of this has been compiled by Dr. Bach. The editor, Dr. Buckley, is to be congratulated on collecting such an interesting and inspiring set of papers in the first volume of what, it may be hoped, will prove a long series. It is evident that much is still obscure, and that in some respects our ignorance is more obvious than our knowledge in the field of chronic rheumatism; this can only act as a stimulus to further effort both by the committee and by all others interested in the subject.

[1] *Reports on Chronic Rheumatic Diseases.* Being the Annual Report of the British Committee on Chronic Rheumatic Diseases appointed by the Royal College of Physicians. No. 1, edited by C. W. Buckley, M.D., F.R.C.P. London: H. K. Lewis and Co., Ltd. 1935. (Pp. 172; 8 plates. 12s. 6d. net.)

TUMOURS OF THE BRAIN

The increased interest which is being given to the subject of cerebral tumours of late years is not remarkable, since recent statistics have shown that deaths from this cause constitute from 1 to 2 per cent. of all deaths in hospital and about 10 per cent. of all deaths from tumour and cancer. This increase of interest has been reflected in a series of monographs, the latest of which, by Professor Paulian of Bucarest,[2] is of value in indicating the present position of brain surgery in eastern Europe. Its three sections follow the lines on which recent advances on the subject have been made—histological diagnosis, radiographic localization, and clinical diagnosis and treatment. In the first section the author follows chiefly the classification recently proposed by del Rio Hortega, which, unfortunately, has not yet been translated from the original Spanish into more widely read tongues. The section on radiographic diagnosis deals entirely with ventriculography by Dandy's method, the value of which is so universally recognized that it has become almost a routine procedure in some clinics. Whether it will hold its own against the use of thorotrast, either by Egas Moniz's technique of angiography or by intraventricular injection as recently suggested by Twining and Rowbotham in this country

[2] *Tumeurs de l'Encéphale.* By D. Paulian. Paris: Masson et Cie. 1935. (Pp. 216; 189 figures. 30 fr.)

and by Freeman in America, is a question for the future.

Improvements in clinical and surgical technique follow one another rapidly with few landmarks to divide the old from the new, but taken together they have brought the surgery of cerebral tumours from the state of despondency and almost defeatism in which it lay a few years ago to one of optimism and achieved success.

WITCHCRAFT DURING THE RENAISSANCE

The Noguchi Lectures last year were given by Dr. Gregory Zilboorg, a trained psychiatrist who has worked for six years in the Bloomingdale Hospital. He chose as his subject *The Medical Man and the Witch during the Renaissance*.[3] The first lecture deals with the physiological and psychological aspects as they are presented in the *Malleus Maleficarum*. Dr. Zilboorg uses the English translation published by the Rev. Montague Summers in 1928. The second lecture carries on the story during the sixteenth century, and the third gives an account of Johann Weyer. Each lecture is interesting. Those who have read the *Malleus* either in the original or in the translation will agree with Dr. Zilboorg that Weyer, quoting from Binz, "was like a sane man preaching to the inmates of a vast lunatic asylum." A pupil of Cornelius Agrippa, Weyer was a level-headed medical man who taught that many of the conditions said to be due to witchcraft were better treated by ordinary therapeutic means than by torture and the stake. But Weyer was far in advance of his time. Witchcraft was thought to continue, and belief in it is by no means extinct, even at the present day. It is noteworthy that in the lectures there is no account of the mass hysteria which led to so severe an outbreak of witch-baiting at Salem village in 1692. Dr. Zilboorg may perhaps have held that it did not come within his period or perhaps refrained because it was too near the home of his auditors. He could at any rate have used it to illustrate his thesis. Dr. C. W. Upham has given an admirable day-to-day account of the miserable proceedings. The lectures contain several cuts as illustrations; there is a portrait of Dr. Zilboorg for a frontispiece and an introduction by Professor Sigerist.

STRUCTURE OF THE ATOM

In view of the discussion on the structure of the atom which formed part of the programme at the recent meeting of the British Association, a statement of the present position of the problem, such as is contained in Professor Schrödinger's *Science and the Human Temperament*,[4] is opportune. The Bohr-Rutherford concept of the atom as somewhat resembling the planetary system has, as Schrödinger points out, been the source of immense progress; but it contains a discrepancy which was admitted at the time of its inception, and can no longer be ignored as of minor importance; and the question, "Do the electrons really exist in the supposed orbits within the atom?" can only be answered, according to Professor Schrödinger, with a decided "No." Among the new theories which are supplanting the Bohr-Rutherford conception the most important appears to be that advanced by Professor Schrödinger himself, based on the wave theory of mechanics, the development of which is also due to him, and is simply explained in the final chapters of his book. The starting-point of this theory was the conception of "electron waves," electrons being regarded as undulations analogous to those of light. The electron waves, impinging against the nuclei of atoms, are held to produce diffraction phenomena, just as light rays impinging against motes floating in a sunbeam produce diffraction phenomena which render the motes manifest as points of light. The atom is thus regarded as nothing more than the diffraction phenomenon arising from an electron wave that has been intercepted by the nucleus of the atom. A chapter which also bears on the above subject deals with the question of the employment of conceptual models in physics, their philosophical value, and their limitations.

The book is excellently translated from the German by James Murphy, who also contributes an interesting biographical introduction and brief analysis of some of the chapters of the work. Professor Schrödinger was appointed to the chair of mathematical physics in the University of Zurich in 1921; while there he propounded his theory of wave mechanics and published what is known as the Schrödinger wave equation, which, according to Max Planck, has provided the basis of modern quantum mechanics. In 1926 he succeeded Max Planck as professor of theoretical physics in the University of Berlin, and in 1933 he left Germany and took a temporary professorship at Oxford. He it was who first gave a statistical formulation to the heat theorem which is now called the second law of thermodynamics, and in doing so he introduced for the first time a statistical law to replace the strict law of cause and effect. He deals with this subject in a separate chapter of the present volume; other chapters are concerned with indeterminism in physics, physical science and the temper of the age, and the nature of natural law. The book is mainly intended for laymen, and, to quote from Lord Rutherford's foreword, many in this country will read these charming and simply written essays with pleasure and interest.

PAEDIATRICS

The third edition of *Recent Advances in Diseases of Children*,[5] by Drs. W. J. Pearson and W. G. Wyllie, contains evidence of much revision, and the modern outlook on the pathogenesis and treatment of diseases of children is well emphasized. The first chapter, which in previous editions contained a certain amount of controversial matter, has been considerably modified and now gives a useful survey of general principles. Modern work on anaemia, ketogenic diets, and immunizing methods for the specific fevers is incorporated in the present volume. *Modern Methods of Feeding in Infancy and Childhood*,[6] by Drs. D. Paterson and J. Forest Smith, has reached a fifth edition, and while containing a mass of useful information it still remains in some respects an unsatisfactory volume, because of the attempt to produce a work which shall appeal to a mixed audience of "doctors, nurses, and mothers." If the authors would decide which group they are really writing for and revise the book accordingly its value would be greatly enhanced. At present it is far too technical a book for the nursery—for example, it contains details of the post-operative management of cases of pyloric stenosis—while certain matter included is of little value to the medical practitioner. "Feeding the Sick Infant,"[7] by Drs. M. Péhu and P. Bertoye, is the revised edition of a little French work,

[3] Baltimore: The Johns Hopkins Press. London: H. Milford, Oxford University Press. 1935. (Pp. 215; illustrated. 11s. 6d. net.)

[4] *Science and the Human Temperament*. By Erwin Schrödinger. Translated and with a biographical introduction by James Murphy. London: George Allen and Unwin Ltd. 1935. (Pp. 154. 7s. 6d. net.)

[5] *Recent Advances in Diseases of Children*. By Wilfred J. Pearson, D.S.O., M.C., D.M., F.R.C.P., and W. G. Wyllie, M.D., F.R.C.P. Third edition. London: J. and A. Churchill, Ltd. 1935. (Pp. 566; 38 figures, 23 plates. 15s.)

[6] *Modern Methods of Feeding in Infancy and Childhood*. By Donald Paterson, B.A., M.D.Cantab., F.R.C.P.Lond., and J. Forest Smith, F.R.C.P.Lond. Fifth edition, revised and reset. London: Constable and Co., Ltd. 1935. (Pp. 213; 187 figures. 7s. 6d. net.)

[7] *L'Alimentation du Nourrisson Malade*. By M. Péhu and P. Bertoye. Paris: J. B. Baillière et Fils. 1935. (Pp. 207.)

which first appeared twenty-six years ago. It contains a good summary of modern views on the methods available and the disorders for which they are indicated. Two recent supplements to the *Acta Paediatrica* consist of useful monographs. Dr. E. Rustung has studied the social and other environmental aspects of rickets in a small community in Norway, and his "Studies of Rickets," Part I,[8] contains many interesting observations. A good point made is that children born in the autumn are less likely to develop rickets than those born in the spring, since they probably get more exposure to fresh air and sunlight in their first year of life than babies born in the spring and early summer, who spend the latter half of the first year of life indoors. Dr. A. Sundal writes on "Chronic Infectious Disorders of the Urinary Tract in Childhood,"[9] and he has produced a well-illustrated and well-documented monograph. The effect of a chronic infection upon renal function has been a special point of his investigations. Both these monographs are in German, the former being a translation from the Norwegian.

Notes on Books

Mollwo Perkin's *Qualitative Chemical Analysis* (Longmans, Green and Co., 9s.) has passed through four editions, the first dating from 1900: the editor is now Dr. Julius Grant. It has proved to be well adapted to the needs of students in many schools of chemistry, and the new edition now before us has been brought into unison with the trend of modern teaching. The scheme of approach by which the student is introduced to the complexities of the subject is one of the best we have seen, and the wording of the text shows evidence of care to ensure that the reader shall not mistake the purport of what is intended to be understood. It would seem that chemists as a whole are more inapt than most in the effort to produce an unambiguous and explicit statement: even Mollwo Perkin writes, "Perfectly pure zinc is not readily soluble in acids, but as usually obtained it is readily soluble," and leaves it to the student to guess that what is usually obtained is not the perfectly pure zinc that is the subject of the sentence. Such a lack of precision in writing, although it looks trivial to the well-informed, is of considerable moment to the uninformed student; the more thoughtful the student is the more he is hampered in his progress by statements that need to be rewritten for better understanding. We find, however, that instances such as we have quoted are exceedingly few in Mollwo Perkin's book, and that the general lucidity of the treatment is such as to place this in the front rank of textbooks of its class. The contents are not only those which the student needs; they include many matters that are valuable to the practising chemist.

We have received a copy of the *Hughlings Jackson Memorial Volume*,[10] edited by Professor Ladislaw Benedek, director of the Clinic for Nervous and Mental Diseases, Debreczen, Hungary. The work consists of fifty-seven papers each with its own pagination, classified under the seven headings of psychiatry, neurology, neuropathology, psychology, care of mental patients, forensic psychiatry, and genetics and neuropsychiatry, of which thirty-eight are in German, eleven in English, five in French, two in Italian, and one in Russian. The editor, who is to be congratulated on this worthy tribute to the great British neurologist, has contributed a large proportion of the papers either alone or in collaboration with his assistants, including an appreciation of Hughlings Jackson and a great variety of other subjects, such as the role of endocrine intoxication in the pathology of mental disease, a medico-psychological study of Count Albert Apponiyi, mushroom poisoning with cerebral symptoms, treatment of nerve syphilis with a non-pathogenic *Spirochaeta pallida* vaccine, drafting of a Hungarian sterilization Bill, and a eugenic and race hygiene programme for Hungary.

To most of us the word "colour" immediately conjures up theories of colour vision and tests for the detection of colour-blindness. Dr. David Katz, in his book *The World of Colour* (Kegan Paul, 15s.), has quite other ideas in his mind when the word is named. He is a psychologist, and our reaction he terms "natural" or "biological." All but a fraction of the people view colour in this fashion. Such an attitude arises from the need for a practical orientation toward the colour qualities of the surrounding world. The psychologist accepts these tangible realities of the world of perception as his starting-point. It would be a kind of psychological perversion if he were to cast these cases aside, and, instead, begin his study with colour phenomena which the colour specialist has been able to produce only under the highly artificial conditions of the laboratory. Few people have the chance of looking into an expensive spectroscope, and those who note their "after-images" probably think there is some momentary upset of the eyes. What natural man would choose the subjective visual grey as the object of his observation? Yet these things were at one time accepted as the only visual phenomena worth study. The psychologist must begin with description, and must also attempt to detect relationships between phenomena and underlying physiological and psychological processes. Science to-day is as interested in the discovery of the genetic problem of "whence" as it is in the problem of "what." That the Maori has approximately three thousand separately designated colours which have practical significance for him indicates the size of the problem. The book has been translated into English and considerably abridged by Dr. R. B. MacLeod. He has done his work well, but the book is not easy reading.

The Central Council for the Care of Cripples (117, Piccadilly, W.1) has published a *Directory of Orthopaedic Institutions, Voluntary Organizations, and Official Schemes for the Welfare of Cripples*, which is at once a most admirable survey of the present position in Great Britain and Northern Ireland, and also a very useful reference book showing the various facilities for treatment and supervision, arranged according to counties. Details are given of the hospitals, clinics, and other institutions which provide orthopaedic facilities, and there are subsections for each autonomous area in the county in which any orthopaedic work is undertaken. A list of orthopaedic hospitals in order of the date of foundation shows that pride of place goes to the Royal Cripples' Hospital, which came into being in 1817, twenty-one years before the founding of the Royal National Hospital, London. While it is assumed that at all clinics where any treatment is available massage is given, remedial exercises taught, and plaster work undertaken, particulars are supplied of centres for special forms of therapy, such as radiant heat, diathermy, and electrical treatment, as well as of places where vocational training can be obtained. There is an excellent index.

The sixth Alexander Pedler Lecture, entitled *Antarctic Exploration Past and Present*, by Commander L. C. Bernacchi, has now been published by the British Science Guild in pamphlet form. Copies, price 1s. 1d., including postage, may be obtained from the secretary, British Science Guild, 6, John Street, Adelphi, W.C.2.

Rough Shooting, by G. K. Yeates and R. N. Winnall (Philip Allan, 5s.), will appeal to the man who has no "shoot" of his own, and who, perhaps, is going to the Connemara coast for what rough shooting he can get, particularly wild-fowling. It is entertaining and thoroughly practical.

[8] *Studien über Rachitis*. By Erling Rustung. *Acta Paediatrica*, vol. xvii, Supplementum II. Upsala: Almgrist and Wiksells. 1935. (Pp. 83; illustrated.)

[9] *Chronische Infektiose Erkrankungen der Harnwege im Kindesalter*. By Alfred Sundal. *Acta Paediatrica*, vol. xvii, Supplementum III. Upsala: Almgrist and Wiksells. 1935. (Pp. 131; illustrated.)

[10] *Hughlings Jackson Memorial Volume*. Edited by Professor Ladislaw Benedek. Debreczen: Clinic for Nervous and Mental Diseases.

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THE SPAHLINGER EXPERIMENTS

Most of our readers will have noticed in the daily press this week an account of the experiments recently completed in Northern Ireland on the preventive inoculation of cattle against tuberculosis with vaccines prepared by Mr. Henry Spahlinger. The experiments,[1] which were conducted by three officers of the Veterinary Research Division of the Ministry of Agriculture of Northern Ireland, may be briefly summarized. Eighteen calves from a tuberculin-tested herd of Aberdeen Angus–Galloway cows, and fourteen other calves from Grade A tuberculin-tested herds, all of which had been reared out of doors, were divided, at the age of 4 to 6 months, into the following groups. Group I: six animals were vaccinated with "old" vaccine prepared in 1926. Group II: two animals were vaccinated with strains grown under rather different conditions from those used for the "old" vaccine. Group III: eleven animals were vaccinated with "new" vaccine prepared in 1929. Group IV: two animals were injected with a filtered extract of tuberculous lesions made in 1922. Group V: two animals were inoculated with the media on which the bacilli had been grown. Group VI: seven control animals. The remaining two animals were used for a preliminary virulence test, and need not be further considered. All animals in Groups I to V inclusive were vaccinated on December 2nd, 1931. The dosage and route of injection varied considerably, and some of the animals were revaccinated, while others were not. On June 6th, 1932, all animals received intravenously a dose equivalent to 2.5 mg. of moist growth, prepared from Petroff egg cultures of seven different strains of recently isolated bovine tubercle bacilli. The animals were kept in the open as before and run together till a year after this test dose, when the heifers were separated and run with a bull. All but one of the surviving heifers—an animal in Group III—became pregnant and calved normally.

The results of the inoculation were as follows. Group I: two animals died of acute generalized tuberlosis (G.T.) in thirty-seven and forty-five days respectively, and one died with advanced tuberculosis of the central nervous system in 743 days. The remaining three animals were killed in good condition 775 to 779 days after the test dose. Group II: one animal died of acute G.T. in forty-five days; the other was killed in good condition in 771 days. Group III: one animal died of tuberculous meningitis and pneumonia in 607 days; one animal developed a tuberculous udder, while the remaining nine animals were killed in good condition 855 to 892 days after the test dose. Group IV: one animal died of acute G.T. in thirty-three days; the other, when killed 765 days after the test dose, was found to be suffering from chronic G.T. Group V: one animal, killed after 869 days, was found to be suffering from chronic G.T.; the other was killed after 770 days in good condition. Group VI: five animals died of acute G.T. in twenty-five to seventy-three days; the remaining two were killed in good condition after 763 and 879 days respectively. Post-mortem examination of the animals in the various groups that were killed in good condition revealed the presence of small lesions, particularly in the lungs and glands, and guinea-pig inoculation showed that all animals were infected with virulent tubercle bacilli. As regards the immediate effect of the test dose, it may be noted that most of the animals in the vaccinated Group III had a sharp febrile reaction and lost condition, but after ten days or so returned to health. The two animals that survived in control Group VI had a rather longer febrile reaction, persisting for about a month, after which they regained their normal appearance.

To obtain a clearer picture of the results the deaths in control Group VI may be compared with those in Groups I and III, which received respectively the "old" and the "new" vaccines. Or, in accordance with Mr. Spahlinger's remarks on handing over the vaccines, Groups IV, V, and VI may be taken as containing control animals, and compared with the vaccinated Groups I, II, and III. By the first comparison five out of seven of the control and four out of seventeen of the vaccinated animals died, and by the second comparison six out of eleven of the control and five out of nineteen of the vaccinated animals died. Either method shows that the vaccinated animals possessed an advantage over the controls, but the numbers are quite insufficient to satisfy any statistical test of significance. That a limited degree of success should have been obtained is hardly to be wondered at, since the vaccine used for Groups I and III differed in no essential way from an ordinary killed vaccine, and there is ample evidence to suggest that dead tubercle bacilli are able to produce a limited degree of immunity to experimental infection.

When it is realized how few animals were available for observation, it is surprising that, instead of dividing them into two equal groups, vaccinating one and treating the other as a control, they should have been divided into no fewer than six groups and treated with five different preparations, two of which were apparently not expected to have any immunizing value at all. For this arrangement Mr. Spahlinger himself was apparently responsible. No two vaccinated animals were treated alike; they all varied, either in the dosage or route of injection—subcutaneous, intramuscular, intravenous—or both. Many of the animals were infested with hoose worms, liver fluke, and

[1] Report on the Spahlinger Experiments in Northern Ireland. H.M. Stationery Office. 1935. (1s. 6d.)

intestinal worms. It is clear, therefore, that this experiment did not conform to the ideal conditions in which a straightforward comparison is made between two groups of healthy animals, one of which is treated and the other left untreated. The results, however, are considered by the Ministry of Agriculture of Northern Ireland to be so satisfactory as to raise the question of compulsory vaccination. Such a conclusion is surely premature. Workers who have had long experience of virulence and protective tests are aware of the relatively enormous variation in the resistance of animals of the same species, and even breed, and they realize the necessity of carrying out experiments on an adequate number of animals in each group. The Ministry is particularly impressed with the resistance of the vaccinated animals to actual intravenous inoculation of virulent bacilli. It must be pointed out, however, that two out of seven of the control animals survived this test. Moreover, it may be asked, is the single parenteral inoculation of virulent bacilli as severe a test as continual exposure to infection under natural conditions? This question may be answered very positively by those who are accustomed to argue on *a priori* grounds, but it is well to remember the striking results obtained by Professor Topley and his colleagues[2] in their studies on the immunization of mice against mouse typhoid. Professor Topley found that, though a considerable degree of protection could be conferred by vaccination against a single intraperitoneal inoculation of living bacilli capable of killing 98 to 100 per cent. of the control animals, attempts to confer any lasting protection on the animals when exposed to natural infection under cage epidemic conditions were very much less successful. The results described on cattle establish a prima facie case for further investigation of Mr. Spahlinger's vaccine.

It is to be hoped that a carefully planned experiment on an adequate number of animals will be undertaken, preferably under the control of a body such as the Agricultural Research Council, in order to obtain more reliable information than is available at present. Besides the control and the vaccinated groups, it might be desirable to include a third group of animals inoculated with a dead vaccine prepared from freshly isolated bovine strains killed with the minimum of injury to their antigenic constituents. Until the results of such an experiment are available both the medical and the lay public will be well advised to retain an open mind on the value of the Spahlinger vaccine in the immunization of cattle against tuberculosis.

FIFTY YEARS OF MEDICAL DEFENCE

The Medical Defence Union, which held its annual meeting last week, has completed fifty years as a professional protection society. It was founded in 1885, soon after attention had been sharply drawn to the need for such protection by a charge of negligence, followed by one of manslaughter, against two medical men in connexion with their treatment of a case of diphtheria. Although both charges failed, and the proceedings were described from the bench as "persecution, not prosecution," the expenses of the practitioners amounted to over £1,000, which was met by subscriptions from the profession. It is rather odd to find that the Medical Defence Union, which is now entirely controlled and administered by medical men, was started by seven laymen, who became its first executive committee. For some years after its formation no case was fought on behalf of a member, but after the Union was reconstructed and its government passed into medical hands a considerable amount of activity began to take place, both in the courts and, more usefully, or at any rate more economically, in the court precincts. The first action in which the Union appeared as plaintiff was undertaken towards the end of 1889, when damages were recovered from the Great Western Railway Provident Society for the wrongful dismissal of a surgeon. By 1891 letters had begun to appear in the correspondence columns of the *British Medical Journal* testifying to the useful function which the Union already fulfilled. Its first president was Mr. Lawson Tait, who held the office until 1893, when he was succeeded by Sir Victor Horsley. The London and Counties Medical Protection Society was started in 1892, and although some early attempts were made at amalgamation nothing came of them. To-day the two societies, both of them highly efficient and possessed of large resources, exist side by side, and a joint standing committee with four representatives from each body prevents duplication and secures co-operative working so far as this may be possible.

In spite of the growth of its rival, which was formed out of a rib from its own side, the Medical Defence Union continued to prosper. On attaining its majority in 1896 it was able to report that its membership stood at 6,500, and that its work embraced almost every legal and ethical difficulty which the practitioner might encounter in his ordinary experience. The only threat to the Union's stability came from the British Medical Association. Just before the Union was founded many branches of the Association passed resolutions appealing to headquarters to provide individual medical defence for members. Counsel advised, however, that the funds could not legally be used for that purpose—the matter dropped, and the M.D.U. was founded. After the reconstitution of the British Medical Association in 1903 the matter was raised again, but it was decided not to undertake work in competition with the existing societies, one of which had been covering the ground for eighteen years, and the other for eleven. A motion calling upon the B.M.A. to undertake individual defence has become a hardy annual at Representative Meetings, but it has

[2] Greenwood, M., Topley, W. W. C., and Wilson, J.: *Journ. of Hyg.*, 1931, xxxi, 257.

not found any large volume of support. On the last occasion when it was brought forward the Treasurer said that the defence societies were doing admirable work ; moreover, he thought it a positive advantage to the Association for medical defence to be undertaken under other auspices, for if the Association had it under its wing this would mean more centralization and consequently a larger target for the missiles of antagonists.

The Medical Defence Union has been very fortunate in its conduct of legal cases. In a noteworthy case in 1894 the practitioner who was being defended by the Union asked it to employ the late Mr. W. E. Hempson as solicitor, and following upon this Mr. Hempson became solicitor to the Union, and so began an association which has continued for forty years between the society and the firm of Hempsons. During the same period the Union has had only three secretaries—namely, the late Dr. A. G. Bateman, the late Dr. James Neal, and the present secretary, Dr. Robert Forbes, who, like Dr. Neal himself, was Deputy Medical Secretary of the British Medical Association before taking up his appointment. The membership of the Union to-day is 18,400, and it deals with about 2,000 cases a year, of which some 150 are referred to the solicitors. Its income is £20,000, and its invested funds at present market value stand at £84,600. It is continually fortifying its members against new dangers inherent in changes in law or the development of medical practice. One new facility which it was decided to afford at the recent annual meeting was to extend the benefits of membership to the estate of a deceased practitioner who at the time of his death was a member. Under the recent Law Reform (Miscellaneous Provisions) Act an action for personal negligence can be maintained against the estate of a deceased person. As membership of the Union is personal and benefits cease at death the Union could not, until its articles were amended, assume any responsibility after the death of a member or even continue to conduct the defence in an action begun before he died.

From the occasional reports in our medico-legal columns it might be imagined that such actions, although serious enough when they occur, are rather remote possibilities for the average practitioner. Such false security is quickly dispelled on reading the examples of cases dealt with which the two defence organizations publish yearly in their reports. However conscientious a practitioner may be, and however friendly the generality of his patients, it is a miracle if he does not encounter sooner or later a difficulty with medico-legal implications, or run across the one patient in five hundred who is incurably litigious. The wonder is that with these various risks—risks which increase with the widening of medical practice and its added responsibilities in connexion with certification and like matters—any practitioner should deem it safe to remain unprotected by a small insurance premium against the sword of Damocles.

GENERAL IDEAS IN MEDICINE

"There are few terms," writes Mr. Wilfred Trotter, "in such deep disgrace nowadays as altruism, and perhaps justly so, for it has been the excuse for a good deal of silliness." The same discredit attaches to the equally honourable words "brilliant," "profound," "learned," and "subtle" as used in reviews and leading articles. We are a little at a loss how to characterize this year's Lloyd Roberts Lecture in a truthful way without using overworked adjectives. We will only say that there can be few members of our profession who would not be proud to have written this lecture and none who will not profit by its study. At the beginning of his lecture Mr. Trotter writes: "It is one of the most curious features in the history of man that his sole uniquely human character, the rational mind, has borne a relation to the advance of knowledge that has always been capricious, often ambiguous, and sometimes hostile." Further on, he writes: "The historian is apt to be indignant at the obstacles to new knowledge offered by the censure of theologians and the persecution of ecclesiastics. Theologian and ecclesiastic have no doubt done their best, but the effect of their utmost zeal has been insignificant in comparison with that resulting from the conscientious use of the rational mind." Mr. Trotter gives well-chosen illustrations of this gloomy truth—perhaps his summary of the aims and effects of Stahl's work is a trifle too concise to be quite just (see *Brit. Journ. Med. Psych.*, xiv, 172)—but nothing could be further from his desire than to disparage the uniquely human character or to deprecate its use in medicine. What he impresses upon us is that "the dispassionate intellect, the open mind, the unprejudiced observer, exist in an exact sense only in a sort of intellectualist folklore ; states even approaching them cannot be reached without a moral and emotional effort most of us cannot or will not make." To illustrate this adequately would be merely to continue to quote from Mr. Trotter's lecture, which all should read.

THYROIDECTOMY FOR HEART DISEASE

As data have been gradually collected during the last two years, a series of reports has been made by H. L. Blumgart and his associates[1] on the results of total thyroidectomy in serious heart disease. Those obtained in thirty-six cases of various forms of arteriosclerotic disease are classed under the symptoms of angina pectoris, congestive failure, and cardiac asthma. On the whole the results are favourable, though the nature of the organic changes present and the advanced age of the subjects treated will obviously set a limit to what can be attained. Another handicap dependent on the age is the low level of the initial basal metabolism, for in every individual this declines after the age of 50 ; thus the range of metabolism reduction, short of untoward myxoedematous symptoms, is narrowed. Of the conditions mentioned above, that most favourably affected by operation would appear to be angina of effort. Cases with a history of coronary

[1] *Amer. Heart Journ.*, June, 1935, p. 596.

occlusion derive less benefit, and their post-operative course cannot be predicted with any certainty. Both cardiac asthma and congestive failure disappeared after operation in some cases, the periods of observation extending up to eighteen months. But it is important to note that patients with congestion are not likely to derive much benefit from thyroidectomy unless the failure can be cleared up by preliminary medical treatment. The post-operative mortality amounted to 8.5 per cent. (three patients) ; all these had advanced congestive failure, though it is not made clear whether or not this was present at the time of operation. If it was, the cases were not really suitable for operation, and no doubt would to-day be rejected. If the criteria of suitability for the treatment as now defined by Blumgart are rigidly applied, it would appear that the operative mortality is very low, and that in a majority of cases the result will justify the procedure.

CARDIAC GLUCOSIDES

During the last few years one or two glucosides have been prepared in pure form from the digitalis plant which are believed to have certain advantages over the older preparations while retaining all their therapeutic properties. At the same time interest has been revived in a glucoside obtained from the oleander tree (*Thevetia neriifolia*), which grows in tropical and subtropical climates ; this has pharmacological properties similar to those of digitalis. Clinical and experimental studies of its action have been made recently in America by H. L. Arnold, W. S. Middleton, and K. K. Chen,[1] and in Germany by F. Flury and W. Neumann,[2] and R. Schwab.[3] The glucoside is called " thevetin " by the American workers, but is known as " folinerin " in Germany, though the substance appears to be the same. Arnold and his co-workers found that it reduced the heart rate in normal men by as much as twenty beats per minute two or three hours after an oral dose ; intramuscular injection acted in the same way, but caused pain at the place of injection. Given to patients with gross heart failure, it was found capable of slowing the pulse, in the presence both of normal rhythm and of auricular fibrillation. Intravenous injection was used for quick results, and a dose corresponding to five cat units might within a period of forty minutes slow the heart as much as forty beats per minute, and irrespective of whether normal rhythm or fibrillation was present. The improvement in the objective and subjective symptoms of heart failure, and the changes induced in the electrocardiogram, appear to correspond closely with results obtained with digitalis. Thevetin is much more potent, as also it is much more toxic, than digitalis ; care is therefore necessary in its administration to avoid overdosage, and even with this care conduction disturbances were found occasionally to arise. Schwab, after a clinical trial of folinerin on eighty patients with cardiac failure, reaches conclusions similar to those of the American authors. He stresses the rapid absorption of the glucoside from the alimentary canal and the satisfactory tolerance after oral administration ; in the solid form it is stable, and can therefore be kept for long periods. " Verodigen " (also known as " gitalin ") has been studied by W. D. Stroud and co-workers.[4] It is described as a digitalis glucoside, yet there is reason to believe that it is a mixture, although it contains only a small percentage of ineffective substances. In powder form it keeps well for periods up to twenty months, and is sufficiently uniform in composition not to require biological assay. In its therapeutic and toxic effects it has an action quite similar to that of standardized digitalis leaf, and as with the oleander glucoside its potency makes careful administration essential. With oral administration (the drug was not given intravenously) full digitalization requires a period of five or six days, during which time a total dose of 1/16 to 1/10 grain was given. Verodigen and the oleander glucoside may have some advantages over the established and cruder preparations of digitalis, but there is nothing revolutionary in their effects. The former appears to be very similar to the digitaline granules of Nativelle. It is also difficult to see at present that the oleander product will be found in any way superior to modern digitalis preparations—for example, stability, uniform potency, and very rapid action with intravenous injection are already achieved in the preparation known as digoxin.

[1] *Amer. Journ. Med. Sci.*, February, 1935, p. 193.
[2] *Klin. Woch.*, April 20th, 1935.
[3] Ibid., April 20th, 1935, p. 564.

INDUSTRIAL HEALTH RESEARCH

The annual report of the Industrial Health Research Board[5] shows that steady progress is being maintained on the lines laid down in previous reports. Spectacular results are not to be expected, but it is found that the gradual advance of knowledge is followed in turn by the stage of practical application to industry. The subject of " accident proneness " continues to occupy the attention of several of the Board's investigators, and it is now found that from the distribution of accidents in one occupation it is possible to predict the likelihood of accidents being similarly distributed in another. Given similarity in exposure to risk, roughly three-quarters of the recorded accidents happen to one-quarter of the people. This rule holds not only for accidents occurring in the factory, but also for domestic accidents in the home. The phenomenon is a personal one, and independent of conscious action or blameworthiness on the part of the possessor of it. An important application of this conclusion is to the drivers of motor vehicles, and an investigation made on four groups of bus drivers and private drivers, numbering 2,604 persons in all, showed that in each group the incidence of accidents corresponded to the predicted distribution. The elimination of the individuals most often incurring accidents would therefore substantially reduce the accident rate of the whole group, and attempts are being made to relate accidents to insurance statistics. It is suggested that the situation may lead to a demand that the State should require every licensed driver to return annually his mileage record and accident record. Another investigation by the Board on bus drivers relates to their alleged excess of gastric sickness. It has not yet been definitely proved

[4] *Ann. Int. Med.*, December, 1934, p. 710.
[5] Medical Research Council. Fifteenth Annual Report of the Industrial Health Research Board, to June 30th, 1935. London: H.M. Stationery Office. 1935. (9d. net.)

that such sickness is greater than in other groups of workers of similar economic and social position ; but if the claim is correct, the question arises whether it is due to irregularity of meal times, to the nervous strain of modern speed, or to some other cause. Sickness absenteeism in the clerical trades and light industries has been investigated in a number of organizations possessing a welfare department, and it appeared that the factory worker has a lower sickness rate than the clerical worker or shop assistant. In each group between 30 and 40 per cent. of the total sickness was due to colds and influenza. The environmental conditions under which industry is carried on have been investigated in several directions. It appeared that even rough work such as tile-pressing needed an illumination of four foot-candles if it is to be maintained at a high standard of efficiency. Again, if weavers are to attain their highest standard it is necessary for them to be protected by ear-defenders from the excessive noise. A very thorough investigation has been made on the influence of atmospheric conditions, including radiant heat, on the comfort and the skin temperature of the workers in a number of factories of various types. Finally, the physique of man in industry has been the subject of a very extensive investigation.

INTERNATIONAL HEALTH SERVICES

The Health Organization of the League of Nations received the usual compliments during the discussions in the Assembly (writes our Geneva correspondent), both in the Second Committee where the work of the organization is reviewed, and in the Fourth, where the budget is approved. The amount estimated in the budget of 1936 for the International Health Organization is 1,180,000 Swiss francs, or about £78,000 at the present rate of exchange. Of this sum the League contribution represents about £58,600, and the remaining £20,000 is afforded by grants from the Rockefeller Foundation. The allocation which the League itself affords for health purposes is a sum about equal to the contribution it receives from Australia or Czechoslovakia. The Health Section consists of twenty-three posts, under a medical director, who receives a maximum salary of 53,000 Swiss francs, and eight immediate assistants, whose maximum is 28,000. The grants of the Rockefeller Foundation are made chiefly to provide the salaries of the special technical staff, which comprises a further eleven members, and is engaged in the service of epidemiological intelligence and health statistics. A contribution of 20,000 Swiss francs annually is made by the Foundation to the Eastern Bureau at Singapore, which is also supported by League contributions and by contributions from certain Governments in the East. This Eastern Bureau has a director, two deputy directors, and a staff of ten. Two considerable items in its budget for 1936 are to meet the expenses of a rural hygiene conference and an international course on malaria, both to be held in the Far East. The League is also committed to certain health and other investigations in Latin America, for which a sum of 100,000 francs has been set aside ; a part of this will be devoted to the international leprosy centre placed under the auspices of the League by the Brazilian Government. During 1936 the Health Organization will pursue certain special technical studies which have been referred to it, such as rural hygiene and housing, nutrition, and physical education. Its permanent tasks are the collection of epidemiological intelligence and health statistics, international studies on malariology, biological standardization, technical studies in the sphere of the campaign against narcotic drugs, and general and technical liaison with the national health administrations. The discussion in the Assembly revealed a " push " in various countries towards rural rehousing. Signor Mussolini some time ago ordered a census of rural dwellings throughout Italy, and as a result 170,000 such houses have been marked for demolition, 500,000 for serious reconditioning to make them fit for human habitation, and a million more for minor repairs. The Duce has declared that within ten years every agricultural labourer must be provided with a healthy and spacious dwelling. To this end a rural housing exhibition and conference is to be held next year in Rome. France also has made an extensive inquiry into the same subject. To the discussion on health organization Great Britain contributed an account of the forthcoming conference in Geneva on biological standardization, which it is hoped may give rise to concrete proposals for a wider use of the various standards prepared by the permanent commission of experts.

"D.Ph.M."

Our attention has been called to the activities of a self-appointed council, which proposes to make a register of " all practitioners of the healing art and science not already registered under the Medical Acts of Parliament." Persons admissible to registration with this body are " osteopaths, chiropractors, naturopaths, manipulative surgeons, botanotherapists, herbalists, and radiologists." There is apparently to be no test of competence beyond the ability to pay a registration fee of seven guineas and " a minimal subscription of one guinea." The enterprising people from whose comic circular we have quoted undertake to issue to their patrons a certificate of registration " which will entitle the holder to be described as a Doctor of Physical Medicine and to use the initials D.Ph.M." It appears further that they have a plan for training their " doctors ": a capital sum of £50,000 is to be raised by the issue of £1 shares for the opening of a " college of physical medicine." All that is needed here and now by way of comment is to remind members of the medical profession that for some years past there has existed a Register of Bio-Physical Assistants under the joint auspices of the Society of Apothecaries and the British Medical Association. This register is published annually as a special *Supplement* to the *British Medical Journal*. We learn that the Association of Registered Bio-Physical Assistants has very properly made representations to the Companies Department of the Board of Trade, protesting in the public interest against the use of the phrase " physical medicine " by such a body as the new council and its proposed college.

On September 28th Sir Charles Scott Sherrington and Sir Frederick Gowland Hopkins received the degree of *doctor honoris causâ* of the Peter Pázmàny University in Budapest.

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some diseases of the nervous system met with in general practice.

THE CARE OF THE PARAPLEGIC PATIENT

BY

PROFESSOR HENRY COHEN, M.D., F.R.C.P.

The care of a patient paralysed in both lower limbs demands a knowledge of the cause, type, and extent of the disease responsible ; accurate diagnosis must precede rational treatment, and to this end clinical, radiological, blood, and spinal fluid examinations, including manometry, must be carried out.

Aetiological Factors

The cause may be: (1) removable ; (2) transient ; (3) irremovable.

1. Removable causes include extramedullary tumour, gumma, subacute combined degeneration, etc., and here the appropriate surgical, anti-syphilitic, or anti-anaemic measures can be instituted ; but the patient will still require care until the damaged area of the cord has recovered its function.

2. Transient causes, being self-limited in whole or in part, but in which no specific therapy is available, include such conditions as myelitis and disseminated sclerosis: here the patient must be cared for in anticipation of maximal recovery until the cause is no longer active and its effects have passed.

3. With irremovable causes, such as laceration due to injury or gunshot wounds and the permanent residua of other diseases of the cord, no recovery of function can take place, but comfort can be achieved and grave painful complications avoided by careful treatment.

The type of paraplegia, whether upper motor neurone (for example, compression in the dorsal region) or lower motor neurone (for example, poliomyelitis, alcoholic peripheral neuritis), is of importance from the orthopaedic standpoint, as in the latter local treatment to the affected muscles is essential, and aims at the prevention of overstretching by appropriate splinting and the maintenance of their nutrition by adequate physiotherapy. Finally, the extent of the lesion—that is, the degree of paralysis, sensory disturbance, and lack of control of bladder and rectum—must be determined.

Practically, it will suffice to consider in detail the treatment of a patient completely paralysed and anaesthetic below the waist with loss of control of both bladder and rectum, for the lesser degrees of cord involvement can be treated on similar though modified lines. Such a patient is extremely susceptible to two complicating infections—of the skin and of the urinary tract. If either of these occurs the essential cord lesion is aggravated by the resulting chronic toxaemia or septicaemia, for the damaged area of spinal cord is a *locus minoris resistentiae*, and recovery will thus be retarded or prevented.

Care of Skin

The patient should lie between smooth sheets on a warm water-bed, the greatest care being taken to avoid rucks in the bedclothes. The lower limbs should be protected by a cradle, so that they are not directly touched by the bedclothes, and the cradle should be sufficiently high to allow full flexion of the lower limbs, so that if involuntary flexor spasms occur there is no chafing of the knees. Hot-water bottles should not be placed in the bed unless so fully protected that, should they be displaced and lie against the anaesthetic skin, they will not be sufficiently hot to burn the patient. A daily bath with soap and water should be given, after which the skin should be thoroughly dried and then hardened by massaging eau-de-Cologne or methylated spirits gently into it, especially over pressure points (the lower vertebrae, sacrum, tuber ischii, heels, great trochanters). If the skin is inflamed alcohol may prove too irritating, and for it should be substituted a boric acid lotion (a saturated solution of boric acid in cold water containing about 15 grains to the ounce). After this friction is completed and the skin thoroughly dry, a dusting powder should be applied of bismuth subgallate or

℞ Acid. borici ... ... 1 part
Zinc. oxidi ... ... 2 parts
Pulv. amyli ... ... 3 parts

The pressure points mentioned above should be specially protected by small pads, rings, or bandages, so that the pressure is taken diffusely by the surrounding parts: for example, the heel can be made to lie in the hollow of a soft ring ; the feet should be supported by a bolster ; and, if marked adduction of the thighs is present, the knees and heels should be kept separated by a pillow or ring. Skin nutrition will be improved by gentle passive movements of the limbs and by altering the position of the patient every few hours, but care must be taken to avoid chafing the skin ; the patient must be lifted and not dragged across the bed. A rope or chain overhanging the bed will allow the patient to raise himself, but with this there is always a danger of dragging and chafing the buttocks or lower limbs.

Sometimes, despite the greatest care, bed-sores develop, or are present when the patient is first seen. If they are of the "black blister" type the serous content should be aspirated and the skin left intact as a protective covering ; if ulceration has supervened compresses of the boric lotion mentioned above or of hydrogen peroxide (10 volumes) should be applied for ten to fifteen minutes twice daily and the part then dressed with unguentum hydrargyri ammoniatum or a zinc paste:

℞ Zinc. oxidi ... ... }
Talc ... ... }
Adipis lanae ... ... } equal parts of each
Paraff. moll. alb. ... ... }

If deep sloughs appear they should be removed by curetting. Pus should be evacuated, the gangrenous edges of the ulcer should be cut away, and the surface cleaned with a 1 per cent. solution of silver nitrate ; then a dry antiseptic dusting powder should be applied, such as iodoform or a powder consisting of equal parts of chloretone and boric acid.

Care of Bladder

If the spinal cord is suddenly and completely severed there is retention of urine, the bladder distends until overflow dribbling results, and there is absolute constipation. In a period varying from twenty-five days to a few weeks this is gradually replaced by automatic or

reflex emptying of the bladder and occasionally of the rectum, emptying of the organ being more or less complete with a certain degree of distension—the adequate stimulus. But this second and desirable stage will not arise if gross sepsis of the skin or urinary tract supervenes, and the bladder will remain permanently paralysed. The most important factor facilitating urinary sepsis is over-distension of the bladder. So long as there is no automatic emptying the bladder should be catheterized every six hours with the strictest aseptic precautions. The operator should scrub up as for a surgical operation; the meatus should be cleaned and the anterior urethra irrigated with a 1 in 4,000 solution of oxycyanide of mercury before the catheter is passed; the bladder should be completely emptied, and after each alternate catheterization—that is, twice daily—150 c.cm. of the solution of oxycyanide of mercury at a temperature of 100° F. should be allowed to run into the bladder gently (not irrigated under pressure) and then drawn off. In my experience a tied-in or self-retaining catheter increases the danger of urethritis and cystitis. Between catheterization the penis should be inserted into a swan-necked bottle urinal, so that if involuntary micturition occurs soiling of the bed and skin is avoided. As a prophylactic against urinary infection it is customary to give a mixture containing hexamine and acid sodium phosphate, but a more stable mixture and a better acidifier is:

℞ Ammon. chlor. ... ... gr. xx
Hexaminae ... ... gr. x
Extract. glycyrrhizae liq. ... ... ♏ xxv
Aquam ... ... ad. ℥ ss
℥ ss four-hourly in a wineglass of water.

If infection takes place the nature of the invading organism and the reaction of the urine should be determined. If the urine is alkaline the acid mixture suggested above should be continued and the bladder irrigated three to four times a day with a 1 in 4,000 solution of oxycyanide of mercury at 100° F., but not more than 150 c.cm. of the solution should be introduced at any one time, in order that over-distension of the bladder be avoided. Alternative solutions worthy of trial are (*a*) a half-saturated solution of boric acid, and (*b*) brilliant green, 1 in 2,000 solution. If the reaction of the urine is acid the following alkaline mixture should be given at four-hourly intervals, and the dose adjusted so as to maintain the urine alkaline.

℞ Potass. citrat. ... ... ℥ i
Tinct. hyoscyami ... ... ♏ xx
Infus. buchu ... ... ℥ ii
Aquam ... ... ad. ℥ i

The bladder should be washed out with a solution of sodium bicarbonate (1 drachm in half a pint of water), normal saline, or a solution of silver nitrate, 1 in 2,000. If the urinary infection tends to persist despite simple treatment on the lines described above, or if a pre-existing urethral stricture renders catheterization difficult, a suprapubic cystotomy with continuous drainage and irrigation of the bladder through the suprapubic stoma should be performed.

Care of Bowels

With the bladder, so with the rectum, the aim is to achieve automatic emptying. A simple aperient—for example, a teaspoonful of liquid extract of cascara or two teaspoonfuls of confection of senna—is given each night, and a simple rectal washout of one pint of normal saline the next morning. The rectum may leak for half an hour to one hour, and it is well to leave the patient for an hour on a special large-sized indiarubber air-cushioned bed-pan; after this an absorbent pad must be applied to avoid soiling the skin. It is necessary to avoid too strong purgation, for this sometimes leads to sloughing of the rectal mucous membrane. Occasionally abdominal distension supervenes and causes much local and respiratory discomfort; this can often be relieved by passing a rectal tube; turpentine and other strong enemata are best avoided lest they lead to sloughing of the mucous membrane. If, in spite of the rectal tube, distension persists, 1 c.cm. of prostigmin (Hoffman-La Roche), containing 1/2 mg. of the active substance, or 1 c.cm. of pituitrin should be given subcutaneously or intramuscularly and repeated in four to six hours if necessary.

Excessive Sweating and Muscular Spasms

In many cases of severe damage to the spinal cord paroxysms of excessive sweating and sudden painful involuntary spasms of the paralysed limbs occur below the level of the lesion, and can be excited by almost any stimulus that sends afferent impulses into the spinal cord below the lesion—for example, by stroking the skin of the lower limbs, or injecting fluid into bladder or rectum. The excessive sweating is serious, because the moisture increases the risk of skin sepsis. The muscular spasms are not only painful but they are extremely disturbing to the patient and interfere with sleep. In both instances, therefore, the afferent stimuli which tend to produce these reflexes should so far as possible be avoided by attention to the details outlined above. Atropine sulphate, 1/100 grain, once or twice daily, will sometimes help to control the sweating. The painful spasms of the legs are often relieved by radiant heat applied for twenty minutes daily, but sedatives are frequently necessary, and the most satisfactory are luminal, 1/2 grain, with hyoscine hydrobromide, 1/200 grain, thrice daily; or the following mixture:

℞ Tinct. gelsem. ... ... ♏ xx
Tinct. stramon. ... ... ♏ x
Sod. brom. ... ... gr. x
Liq. arsenicalis ... ... ♏ ii
Aquam chlorof. ... ... ad. ℥ ss
℥ ss t.d.s.

If pain is severe 10 grains of aspirin thrice daily should be prescribed. Opium preparations are best avoided.

Physiotherapy

Apart from passive movements of the paralysed limbs, which are important in maintaining the circulation, gentle massage to the legs, back, and abdomen should be given, but no electrical treatment is indicated. Voluntary movement should, however, be encouraged.

When the paraplegia results from a lesion of the anterior horn cells (for example, poliomyelitis), cauda equina (for example, injury or radiculitis), or peripheral neuritis, the same general principles of treatment apply, but the limb must be carefully splinted, so that affected muscles are not over-stretched—an orthopaedic problem.

Conclusion

The general care of the paraplegic patient is of as great importance as the removal of the cause of the paraplegia; only meticulous attention to detail will prevent a fascinating and live problem from becoming a dead failure. But physical treatment is not all; it is of the utmost importance to surround the patient with an atmosphere both encouraging and optimistic, to provide him with suitable mental interests, and, if possible, with an occupation that will help him forget the more tragic aspects of his disability. As soon as he is able he should be taken out of doors and provided with some form of autocycle, so that he may be his own master. The individual case presents its individual problems, and methods can often be devised for the individual to increase his comfort.

OPENING OF NEW SESSION: AUTUMN DINNERS

WESTMINSTER HOSPITAL

The old students' dinner of Westminster Hospital Medical School was held at the Trocadero Restaurant on September 28th, with Dr. Vivian B. Orr presiding. The toast of "The Hospital and the Medical School" was proposed by Mr. E. Rock Carling, surgeon to the hospital, who took occasion to speak of the plans and prospects for the school in its new quarters, the foundation stone of which was laid by the Prince of Wales in June last. He referred to the provision for pathological laboratories. Reports had been forthcoming during the last year or two of the building of palatial schools in France, Italy, and other countries, but it was noticeable that in these schools, which were paid for by the State, the inadequacy of the laboratory was in striking contrast to the lavishness of the equipment in other respects. To make the new Westminster buildings adequate and efficient had meant a heavy financial outlay, and had called for great courage and intelligent sympathy on the part of the administration. Thanks, however, to the generous support of Mr. Meyerstein and other donors, the necessary money might be said to be within sight, and the arduous work of planning for the future had been completed. Ample provision had also been made, he added, for the social and recreational needs of students. Brief responses were made by Dr. Arthur Davies, who mentioned distinctions in various fields which had been gained by former students of the school, and congratulated all concerned on the approaching completion of the new buildings; and by Mr. J. O. Collin, secretary of the Students' Clubs Union.

In proposing the toast of "The Guests" Dr. Adolphe Abrahams, dean of the school, reminded the company that since the war the King had entrusted the school with the instruction of the officers of the Royal Army Medical Corps who sought promotion, and as this arrangement had been continued without interruption it could be assumed that it had given satisfaction. This made them the more proud to entertain that evening the Director-General of the Army Medical Services, whose presence might be taken as evidence of past satisfaction and future confidence. Another distinguished guest was the principal of King's College, to whom they were deeply grateful for all he was continually doing for the school. Responses were made by these two guests. Lieut.-General Sir James Hartigan expressed the hope that the happy relation between the Royal Army Medical College and Westminster Hospital would continue in the future, and would, indeed, become closer now that they were to be next-door neighbours at Millbank. His own particular sphere of interest was the defence services, to which, as indicating the pacific intent of the people of this country, no special regard was given in times of peace, so that the Services were reduced to an absolute minimum. But it was now recognized that the defence forces needed strengthening, in which process the medical branch must take its share. Everyone hoped that a great crisis such as that of 1914 would not recur, but if it did he was confident that members of the civil profession would once more come to the assistance of their colleagues in the Services and provide the sailor, the soldier, and the airman with the best professional skill the country had at its disposal. But that was not quite enough; it was necessary that in the meantime the Services should possess a thoroughly up-to-date medical organization capable of expansion to meet any emergency. Dr. W. R. Halliday said that a great number of Westminster students were King's College students also, and he hoped the association between the two bodies would continue. In the past the arrangements between the college and the various hospital medical schools had been framed on a series of contracts, which it now appeared must come to an end. It would have been easier to go on as before, but he thought that in the long run the new arrangement, which was a more voluntary association, would lead to greater co-operation. There was the utmost good will on the part of the college. Professor Blair, dean of King's, added a few words, saying that much as he looked forward to going to Glasgow, his old university, where he has been appointed regius professor of anatomy, he had many real regrets on leaving King's and its associated hospitals. King's had been extremely good to him, and Glasgow was the only place which could have tempted him to leave it. Mr. Arthur Evans, senior surgeon to the hospital, in a speech marked by his usual humour, called upon the company to drink the health of "The Chairman," and with Dr. Orr's brief reply the formal proceedings ended.

ST. MARY'S HOSPITAL

About 120 of the staff and past and present students of St. Mary's Hospital Medical School assembled at Claridge's on September 28th for their annual dinner, which took place under the chairmanship of Mr. Duncan Fitzwilliams. The company included Sir George Handover (Mayor of Paddington), Mr. H. L. Eason (Vice-Chancellor of London University), Mr. V. Warren Low, Dr. Wilfred Harris, Dr. Montague Smith, Dr. John Matthews, Dr. W. W. Stocker, Colonel W. Parkes, and Professor Huggett. Apart from the loyal toasts, the only toast given was in compliment to the chairman, so that at quite an early hour those present were afforded the opportunity of moving about the room and renewing old acquaintanceships.

Mr. C. M. Wilson, dean of the school, in proposing the toast, set out to convince the gathering that "Fitz," as he called him, was different from the mass of mankind, not only in quantity but in quality! In proof of this he mentioned, among other things, the fact that the chairman, on finding that he could not play golf, gave up the game. Bearing in mind the number of people who travelled around golf courses, achieving astronomical figures, such an action was not only original but a grand gesture. It was also extraordinary that, after an experience of four years of war, he should have prolonged his military adventures by going to Siberia (Mr. Fitzwilliams was consulting surgeon to the North Russian Expeditionary Force, 1918). Inasmuch as the tom-toms were again beating in the bush, one had a feeling that it would be well to make the most of him while he was still here; perhaps the streets of Addis Ababa would soon become familiar with his car, the two headlights mounted on the roof! Although, added Dr. Wilson, it might be thought that he had approached the toast with levity, the more discerning would appreciate his true opinion of their chairman. An institution gained immeasurably by the presence of such a personality, and when he was known in it, not by his full name, but by an abbreviation, one might be certain that he held the heart of that institution and was rich in its affection.

The Chairman, who responded with equal humour and with many apt stories, recalled that twenty-six years had elapsed since he was elected to the medical school staff. His occupancy of the chair on that occasion indicated that he was a great deal older than he felt. He was in the chair because he was told to be there by the dean, the local Mussolini. Drawing attention to the many cups which were displayed at the dinner, and which he described as a goldsmiths' and silversmiths' exhibition, he referred to the athletic reputation of St. Mary's to-day. The time would come when the hospital would need a bigger sports ground for itself than the one which it at present shared with Middlesex. He next referred to changes in the school staff: the loss, by death, of Professor Collingwood (whose place had been filled by Professor Huggett), and, by retirement, of Dr. Wilfred Harris and Sir William Willcox. In a comment on alterations and additions to the school, he mentioned that the hospital committee had laid hands on a person named "Anonymous" who was adding a new block. He concluded with appropriate words of welcome to some of the guests.

THE MIDDLESEX HOSPITAL

The annual dinner of the past and present students of the Middlesex Hospital Medical School was held on October 1st at the Savoy Hotel, with Dr. H. Campbell Thomson in the chair. After the loyal toasts had been honoured the health of the Middlesex Hospital and School was proposed by Dr. Thomson, who said that he was deeply conscious of the honour of being chairman in such an important year in the history of the Middlesex. The school had celebrated its centenary, and the new buildings had been completed. Twelve years ago the hospital was falling down. It had required immense courage to set about the rebuilding of the hospital, and the adventure had come to an end that year with a success seldom equalled in the history of the voluntary hospitals. For the gift of the clinical unit their thanks were due to their benefactor, Mr. S. A. Courtauld, and it was hoped that as a result of co-operation between the clinicians and the laboratory workers results of far-reaching importance would be achieved. The *x*-ray diagnostic department, the gift of Mr. W. H. Collins, was equipped with the best apparatus that could be obtained. Another department now under development was the radiotherapeutic department, the gift of Mr. E. W. Meyerstein, to whom the hospital was deeply indebted. The chairman then read a telegram from Mr. Meyerstein, announcing the gift of £3,000 to endow a scholarship for students of the University of London. At the present time, Dr. Thomson continued, Prince Arthur of Connaught was hoping to receive donations to start a fracture clinic at the Middlesex. Concluding, the chairman referred to the good work that was being done for the school by the dean, Dr. Boldero, who was thus continuing the tradition so worthily upheld by the former deans, Mr. Webb-Johnson, Mr. Pearce Gould, and Dr. Izod Bennett ; as a result of their efforts the school was now in the first rank of medical education. With the toast he would like to associate the names of Mr. S. A. Courtauld, Dr. H. E. A. Boldero, and Dr. M. Hynes, who represented the students.

In a brief reply Mr. S. A. Courtauld complimented Dr. Campbell Thomson on his history of the medical school, and mentioned that in the past year the annual meeting of the Association of Physicians had been held at the Middlesex, and that a party of American doctors had been there on a post-graduate visit. He wished the school every possible success.

Dr. Boldero said that the actual number attending the dinner was 364—a record and an index of the school's activities. One of the most important events of the year had been the opening of the Courtauld wards and the lecture theatre, which was a great asset to clinical teaching. Another fact of much assistance to the teaching at the Middlesex was the friendly co-operation of the London County Council in this respect. During the year, the dean continued, the Council had decided to offer two new scholarships to students of London University. Mr. E. W. Meyerstein had endowed the first scholarship, and the telegram read that night announced his endowment of the second. Another donor to whom he would like to refer was a descendant of Sir Charles Bell—Captain Bell, who had endowed a prize for anatomy. Dr. M. Hynes also responded. The toast of " The Guests " was proposed by Mr. E. W. Riches. Mr. H. L. Eason, Vice-Chancellor of the University of London, in reply, said on behalf of the guests that they had had a most extraordinarily pleasant evening. The atmosphere of enthusiasm at the Middlesex was an example to London. During the last twelve years the Middlesex had done something not equalled by any other school, and he would like to express the appreciation of the Court and the Senate of the University of London of the benefactions of Mr. S. A. Courtauld and Major J. J. Astor. He concluded by saying that it did not matter what happened to the voluntary hospitals so long as the teaching schools kept their independence of thought and action. The health of the chairman was proposed by Mr. A. E. Webb-Johnson, who said that Dr. Thomson had always identified himself closely with the students' activities. What he had done for the school and hospital could never be too highly assessed.

SEASIDE THERAPY IN THANET

BRITISH HEALTH RESORTS ASSOCIATION CONFERENCE

On September 28th, the fourth anniversary of its birth, the British Health Resorts Association opened a conference at Margate, and its founder, Lieut.-Colonel R. H. Elliot, in an introductory review of the main objectives, emphasized the dependence of the association on the support received from the medical profession. He added that there was now being revealed the unsurpassed range and excellence of the health resorts of this country. The meetings were held in the Winter Gardens, and the entertainments included a charabanc tour of the nine miles of sea frontage of Margate and a luncheon party at the St. George Hotel. About seventy delegates and visitors attended.

Town Planning at the Seaside

Mr. Clough Williams Ellis opened a discussion on town planning at the seaside with an assertion that the architecture of holidays, happiness, and health, well understood in the Regency period, had been forgotten in the long darkness of the Victorian and Edwardian eclipse. Margate had, nevertheless, retained her open spaces, and the present town planning scheme aimed at correcting the gross architectural errors. He insisted that every self-respecting town ought to have its own supervising and advertising town planner, and should make full use of the powers now available under the Town and Country Planning Act.

Mr. Wesley Dougill, editor of the *Town Planning Review*, said that the seaside holiday had now become an established national institution as well as paving the way for permanent residence on the coast for the inhabitants of many big towns, thanks to the improving railway facilities and the potentialities of motor transport. The immense amount of resulting activity called for the setting up of a central committee or department charged with the task of preserving in perpetuity a wide belt of open space round the whole coast, with free public access to it, and with no building obstructing the view seawards. There must be a concentration of shack and caravan colonies so that they should not spoil the scenery and other amenities, and a prevention of any private land development which in its location or type was against the interests of the community. There must be a proper distribution of the various types of holiday and residential resorts, and with recreation zones in sectors near large centres of population. There must also be provision for the colder seasons, so that medical practitioners might be able to send patients to places adequately equipped to supply indoor recreation and cultural education, and offering sheltered sea fronts for invalids. Health and holiday resorts required a special technique both in planning and in architecture. Mr. E. G. S. Elliot detailed the various necessary steps to be taken. It was important that visitors arriving by car, train, sea, or air should form good first impressions. The main approach road should be an avenue leading straight to the heart of the town, and there should be evidence of parks, tennis and golf facilities, as well as a seashore undamaged by villadom.

Dr. Alfred Cox, general secretary of the association, said that seaside town planning was now revealed as a great practical possibility. It was important to provide at coastal towns all that might be needed by persons of very various dispositions ; an excellent example in this respect had been set by Margate. Dr. J. J. Paterson, medical officer of health of the East Berks sanitary districts, pointed out that more co-operation was needed between town planning experts and local authorities ; this might well become an objective of the association. Later in the discussion it was strongly urged that the prevention of noise was another most important objective, especially in places to which invalids were to be sent.

Convalescence on the Thanet Coast

Sir Leonard Hill expressed the opinion that a bracing climate, like that of Margate, depended on the stimulation of the skin by the cooling power of the air, and by the loss of radiant heat to the sea and sky. On the south coast under the cliffs there was protection from cold winds with warmth by the sun heat reflected from the cliffs. On the east coast the breeze blowing off the sea came over the cliff edge with far greater cooling power than it had a little way inland. Standing on the cliff edge, one faced the cold sea and lost radiant energy to it. Rays from bright sources, such as the sun, were far more comfortable for most people than those from dark or dull red sources, and the ultra-violet rays had vitamin-forming capabilities in the body. The stimuli of the touch of cool air and of losing heat to the cold sea by radiation excited the nervous system into making the body active ; they sharpened the appetite, and enhanced nutrition. There was, however, danger from too much exposure of the body to cold, especially in young children, as well as from sunburn. In the first instance, the power to digest enough food to meet such conditions might be overtaxed, and harm result.

Mr. W. Greenwood Sutcliffe recalled the steps by which Margate had become a pioneer place for the treatment of surgical tuberculosis. At the Sea Bathing Hospital, founded by Lettsom in 1791, heliotherapy had now been introduced to supplement the other therapeutical procedures. At first climatic and sea therapy had been almost exclusively employed ; then had followed a period of surgical intervention particularly for cervical glands, and associated with the name of W. Knight Treves ; of late years the numbers of tuberculous glands had much diminished in common with other forms of surgical tuberculosis, and the London County Council had, in consequence, decided to convert Princess Mary's Hospital into a convalescent home for women. Apart from this disease, Margate was an excellent place in which to convalesce after severe operations and illnesses. The bracing effects of the air were probably due to the fact that the breezes coming over shorter tracts of sea were not so saturated with moisture as in southern and western resorts. The years of early childhood spent by many in this environment must increase resistance to all forms of disease.

Dr. H. M. Raven discussed the medical aspects of the question. He warmly commended the article on the influence of calcareous drinking water in health and disease by the late Dr. P. Lewis (*British Medical Journal*, July 22nd, 1911), and emphasized the value of calcium in nature's process of healing. He reported the results of a questionary addressed to medical practitioners in the Isle of Thanet, which had shown that while cases of anaemia in children, debility, post-nasal catarrh, empyema, malnutrition, and neurasthenia did well, cardiac weakness, circulatory troubles (especially chilblains), bronchitis, and rheumatism required special supervision, and were sometimes unsuitable. Rheumatic fever was rare among residents of Thanet, and rheumatic and cardiac cases did well if very fully rested ; eight to sixteen months was needed for their convalescence. Children with chorea not complicated by cardiac lesions were benefited, but there had been cases where nervous and excitable patients had been made worse ; children from the Tropics invariably did well. Unregulated sea bathing was dangerous, especially for delicate children with poor circulation and any tendency to urticaria. Paddling was often the indirect cause of illness beginning with chill. Stress was also laid by Dr. Raven on the grave psychological risks inflicted by parents who frightened their children by urging them into bathing in too deep water.

Climatological Factors

Dr. E. P. Poulton said that the term "relaxing" as applied to climate might preferably be replaced by "sedative." Wind was one of the most important factors as a body-cooling agent and as a component of a bracing atmosphere ; other such components were absolute rather than relative humidity and equability of climate. Dr. W. G. Willoughby had shown that on the south-east coasts in summer the night temperatures were higher and the day temperatures lower than at inland places both in winter and in summer. Further, the temperature of the sea water rose from east to west on the south coast, agreeing with the classification of the British Health Resorts Association, which was based on a milder climate in the south-west and a more bracing one in the south-east. Another factor of great importance in the climatological character of a health resort was the amount of sand exposed between the promenade and the sea. Dr. Poulton suggested that the association might well arrange for a combined study of this whole problem. Certain climatological investigations should be made at the same solar time each day at different places round the coast, the usual meteorological observations being supplemented by katathermometric studies, all of which would be undertaken by voluntary observers. The findings should be correlated by a special worker at headquarters, and the result would be of the greatest value. The health resorts should support such a scheme financially, since they would gain the knowledge of the particular attributes of each one and its potentialities for convalescence and holiday-making. Allusion was made to the exaggeration and falsity in the claims made in respect of ozone in the air, sun bathing, and the use of the sea. Repeated exposures to ultra-violet rays caused multiple ossifications in the body, while the worst kind of bathing was that in which diving was alternated with long periods of chilling during the waiting periods in the air. Haeberlin had shown, on the other hand, that the chest measurements and vital capacity of children increased much more quickly during the summer while at the Dutch coastal resort of Wyk than during the rest of the year at home. There was a rise in the haemoglobin content of the blood, which fell during the remaining months at home, and a marked increase of weight, which took six weeks before it became constant. A ten-years survey, conducted at the Royal Sea Bathing Hospital, Margate, had revealed that of a total of 2,273 cases of non-pulmonary tuberculosis the process became quiescent in 70 per cent. and the condition was improved in 19 per cent., while there were only 6.6 per cent. of deaths. Of forty-two cases of non-tuberculous diseases, rather more than half of which were chronic septic osteomyelitis, empyema, and arthritis, there were only two deaths, and only three were unimproved. These results were attributable largely to the stimulation of the metabolism by the open-air life and the bracing climate.

Continuing the discussion, Dr. C. O. Hawthorne congratulated the meeting on the great amount of scientific evidence which had been adduced in favour of the popular view of the benefit to be derived from residence in seaside health resorts, and Margate in particular. There were still many questions awaiting answers, and many different problems of medical interest to be solved, among which was the bacteriological aetiology of surgical tuberculosis, which was of essential importance in the campaign against this disease.

The Professional Classes Aid Council completes twenty-one years of existence this month. It was instituted as a war relief organization, which in 1921 had to be reconstituted in view of the still urgent need for its activities, although the war had ended. The report for the twelve months ended April 30th, 1935, shows a small increase in the number of applications for assistance and in the number of persons helped, some of whom were members of the medical profession. Grants were made for the relief of domestic distress resulting from illness, for the part expenses of educating children, for temporary emergencies, for the support of the aged and infirm, and for securing livelihood. Advice was given to many who did not understand how they could gain benefit from other funds to which they had a real claim. One of the patrons of the council is Lord Dawson of Penn, P.R.C.P., and the British Medical Association is represented on it by Mr. N. Bishop Harman.

Nova et Vetera

THE FIRST CHARLES DARWIN AND THE USE OF DIGITALIS

Charles Darwin (1758–78) was the eldest son of Erasmus Darwin, physician, naturalist, and poet of Lichfield, and grandfather of Charles Darwin, the author of the *Origin of Species* (1859). The first Charles Darwin died from the effects of a dissection wound before he reached the age of 21, but after showing such ability and promise that he was noticed in Benjamin Hutchinson's *Biographia Medica*. It would therefore almost seem, as Professor John Fulton[1] says, that "Nature, thwarted in her endeavour, caused another Charles Darwin to see the light of day." The first bearer of this great name inherited from his father the infliction of stammering, which was cured after two years in Paris, where he entirely abstained from the use of his native tongue. When 16 he matriculated at Christ Church, Oxford, but, disliking the atmosphere of the pursuit of "classical elegance," he left after a year for the "robuster exercises of the medical schools of Edinburgh." His short career there was extremely brilliant; he left behind a graduation thesis, translated and published with additional notes by his father in 1780—"An Account of the Retrograde Motion from the Absorbent Vessels of Animals' Bodies in Some Diseases"—and an unpublished manuscript, now in the library of the Medical Society of London, on the varieties of the pulse, their causes and uses in medicine.

In the graduation thesis there are case reports of dropsical patients treated by foxglove; this was five years before Withering's *Account of the Foxglove* (1785) appeared. Professor Fulton, however, brings forward overwhelming evidence that this was an addition made by Erasmus Darwin, who had become acquainted with the use of digitalis, having in 1776 met Withering in consultation over a case in which the drug was given. Withering, who, not perhaps unnaturally, was annoyed by the garbled account of the case and want of acknowledgement, further mentioned that Andrew Duncan of Edinburgh had told him that "the late very ingenious and accomplished Mr. Charles Darwin" had informed him of the use of the foxglove by Erasmus Darwin and Withering for hydrothorax.

Thus priority of publication must be granted to Darwin, but on every other ground Withering deserves full credit for the discovery. The full text of Professor Fulton's article, with illustrations, contemporary letters, and bibliography, will be published as a monograph.

EARLY LICENCES TO PRACTISE

From early times the bishops were accustomed to issue licences to practise in medicine and surgery. These were given out by the officials of the archdeacons, who had the supervision in the matter. They also issued licences to midwives. I have recently been given a considerable number of these documents—chiefly petitions to practise—copied from the Archdeaconry records at Canterbury. Between 1661 and 1717 eighteen applications were made. The following is a selection from them.

I

26. April 1662 These are to certifie that Wilyam Richards, the son of Wilyam Richard was bred with a Chirurgion of Dover and after sent up to London to live with Robert Bullacke Chirurgeon of London an ancient Master of the Companie of Barbar Chirurgeons of London and all the time he lived with the said Robert Bullacke he was ingenious in reading and practice of Chirurgerie and therefore a meete and fit man to practice and exercise the art of Chirurgerie. In testimony whereof per me

Robt. Bullacke.

[1] Fulton, J.: *Bull. New York Acad. Med.*, 1934, 2 S., x, 496.

II

To the Most Honble Court Spirituall in Canterbury these are to certify that the bearer thereof Francis Henbury did put himself apprentice with John Bennett Barbar Chyrurgeon of Brenchley in the County of Kent for the term of seven years as is shewn by certain indentures dated 17th April, 1676 and whereas the said Francis did not practise the said craft or science after the expiration of his apprentiship until by the neglect of John Thorpe chyrurgeon of the parish of Hawkherst wherein the said Francis now liveth in the absence of the said John was inforced to practise bloodletting and other things . . . to the preservation of many persons taken with plurisies and other suden diseases and in so doing hath done much good in the Parish. Wherefore we the inhabitants of the said Parish of Hawkherst whose hands are hereunto subscribed do desire your Most Hone Court to grant him your Lycense to practice the same. [Here follow ten signatures of the chief householders in the parish.]

III

1661 That David Jones of the Towne of Faversham in the Countie of Kent, gent. is a person of good Literature and more particularly both in the Theory and Practicke part of Physicke of which we have good experience for many yeeres and hath been on all occasions very ready to promote the King's Maties happy Restoration as hee had been formerly a reall sufferer in the cause of his late Matie of blessed memory. In testimony whereof we subscribe ourselves

John Trouts, Mayor.
Teynham [*Lord*].
Edward Hales [*Bart.*].
John Tufton [*Honble*].
Wm. Hugessen [*Ancestors of*
John Hugessen *Lord Brabourne*].
and divers others.

F. William Cock, M.D.

CORRESPONDENCE

Nomenclature of "Epidemic Myalgia"

Sir,—In the *Journal* of September 28th (p. 602) a report is given of a case of Bornholm disease. May I enter a mild protest against this term before it becomes too widely used? It is true the first detailed description of the condition was given by two Bornholm doctors in an outbreak which took place there in 1903, but the disease had occurred elsewhere before this, and is far more widespread than the local name would lead one to believe.

The condition is far better named epidemic myalgia (or myositis). It has been reported from Zeeland, Iceland, Norway, Sweden, England, Portugal, Germany, and the United States. If the term "Bornholm disease" is allowed to gain ground there will be as much difficulty in rectifying it as there has been in replacing "Malta fever" by "undulant fever," which is an almost universal disease.—I am, etc.,

H. Harold Scott.

Bureau of Hygiene and Tropical Diseases,
Keppel Street, W.C.1, Sept. 27th.

Sugar Tolerance Test

Sir,—I found Dr. Otto Leyton's article on the sugar tolerance test in diabetes mellitus of great interest. As a student I gained the impression, rightly or wrongly, that a sugar tolerance test was the method par excellence for arriving at a diagnosis. I gathered that a curve showing concentrations of sugar greater than 180 mg. per 100 c.cm., provided that such concentration was maintained, was of almost as much diagnostic significance in diabetes as a positive sputum is in pulmonary tuberculosis. In my own limited experience as a general practitioner I have had at least one case which caused me to doubt the complete utility of the test.

The case was a young woman, two and a half months pregnant, whom I was called to see about two years ago. She was persistently vomiting, wasted, and obviously very ill. On examining her urine I found Benedict's and Rothera's tests to be strongly positive. She had no definite history that would indicate diabetes. She certainly was very thin, but she stated she had always been so and she had been vomiting a great deal. She said she had been passing more urine, but I took this to be a pregnancy frequency, and not a polyuria. I concluded tentatively that she was a case of hyperemesis gravidarum with lactosuria or possibly renal glycosuria. I had her admitted to our local hospital for observation and treatment.

In hospital, examination of her urine showed the presence of glucose and not of lactose. She had slight polyuria. A sugar tolerance test using 50 grams of glucose gave the following figures: (1) fasting, 180 mg. per 100 c.cm.; (2) three-quarters of an hour after glucose, 225 mg. per 100 c.cm.; (3) one and three-quarter hours after glucose, 212 mg. per 100 c.cm. I concluded that she was a diabetic complicated by pregnancy, and gave her a liberal carbohydrate diet and fairly large doses of insulin. She made a very good recovery from the hyperemesis and carried on with her pregnancy, occasionally having glycosuria.

After her confinement her general condition was greatly improved, and I discontinued her insulin and gradually increased her diet. Glycosuria disappeared completely. About a year ago, very much doubting by this time that the condition was diabetes, I had another sugar tolerance test done, with the following result: (1) fasting, 95 mg. per 100 c.cm.; (2) half an hour after 50 grams of glucose, 114 mg. per 100 c.cm.; (3) one hour after glucose, 115 mg. per 100 c.cm.; (4) two hours after glucose, 100 mg. per 100 c.cm. She has remained perfectly well ever since, and eats what she likes.

As regards pregnancy cases I must say I have been impressed by the number in which I have had positive Benedict tests. I cannot help thinking that many of these are due to glycosuria and not to lactosuria, and that a hyperglycaemia in pregnancy is more common than is generally supposed. Textbooks I have consulted are, however, rather silent on this point. One other case I have had—a middle-aged man, whom I discovered to have glycosuria and whose fasting blood sugar was 201 mg. per 100 c.cm.—was certainly no diabetic.

I think Dr. Leyton has raised some very interesting points, and has made it clear that clinical signs and symptoms should not be neglected—even in such a happy hunting-ground for the biochemist as diabetes mellitus.—I am, etc.,

New Eltham, S.E.9, Sept. 25th. F. Craven, M.D.

Trauma and Tracheal Intubation

Sir,—Dr. Blair Gould's account in the *Journal* of September 14th (p. 499) of a granuloma of the larynx presumably caused by a rubber tube will be of interest to all experienced anaesthetists. To me it is of particular interest since I have expended much trouble over the size and consistency of the rubber tubes manufactured for anaesthetic purposes. To my knowledge Messrs. A. Charles King make every effort to maintain an even standard, and from time to time much unsuitable material has been discarded. It must be borne in mind, however, that rubber is affected by age, climate, and also by use and disuse. It is the duty of the anaesthetist, therefore, to be certain that the rubber is in proper condition before intubation is attempted. Precautions against trauma in intubation have been fully pointed out by me previously.[1] It seems necessary to emphasize again that the presence of free nasal breathing should be determined before the nasal route is selected. In addition to careful lubrication of the tube a few drops of sterile liquid paraffin in the nose is not only an invaluable aid in passing the tube but also a useful protection to mucous membranes dried up by preliminary medication.

Some points in Dr. Gould's article appear to call for comment. In the case quoted he states that a Magill's tube, size 4, was inserted. Since these tubes are intended for to-and-fro breathing via the lumen, size 4 is inadequate for the respiratory requirements of any adult woman—that is, unless Dr. Gould employs the now somewhat antiquated method of insufflation. From his comments it would appear that Dr. Gould finds it necessary to use a comparatively stiff tube for "blind" intubation. This is entirely contrary to my own practice. For a number of years, in fact, Messrs. A. Charles King have provided me with thin-walled resilient tubes specially designed for the "blind" nasal method of introduction. Such tubes find their way into the trachea through the nose under suitable guidance much more easily than those of harder composition, and in experienced hands they do not kink.

From his conclusions it may be deduced that Dr. Gould prefers to intubate by direct vision with the aid of deep anaesthesia. If this conclusion is the result of his experience, clearly he would be well advised to leave "blind" intubation alone. In my own experience, however, and in the experience of other anaesthetists with whose work I am familiar, "blind" intubation (not necessarily with deep anaesthesia) has proved to be a definite advance in the prevention of trauma. Instrumentation of any kind incurs the risk of injury to tissues however perfect the technique, and sore throat of a transient nature may follow intubation. It is significant that this complication occurs most frequently in those cases associated with much manipulation of the jaw or movement of the head by the surgeon. It is relatively infrequent when the operation area is other than the head and neck—providing, of course, that intubation has been carried out correctly. I am confident that the surgeons with whom I work will agree that the advantages of the method easily outweigh the risks. At the same time it is opportune to point out that, notwithstanding the value of intubation when indicated, the tendency towards wholesale use of the method in every class of operation is unjustifiable.

As regards the history of endotracheal anaesthesia, in the *Journal* of September 28th (p. 601) Dr. Clausen again refers to the work of F. Kuhn. It is clear that Kuhn appreciated the value of the artificial tracheal airway. As far as nasal intubation is concerned, however, the passage of a Kuhn's tube of adequate calibre through a normal nose without injury is a practical impossibility.

For my own part, so far as I am aware the wide-bore rubber tracheal tube and the "blind" method of intubation were original conceptions, but since there is "nothing new under the sun" it is highly probable that such a simple device as a rubber tube and the equally simple manœuvre of passing it through the nose into the trachea without opening the patient's mouth were already known before I happened to discover them.—I am, etc.,

London, W.1, Sept. 28th. I. W. Magill.

[1] *British Medical Journal*, November 15th, 1930.

The Prescribing of Drugs

Sir,—In your issue of September 28th, in your valuable series "Treatment in General Practice," Dr. Wilfred Harris describes the treatment of Bell's palsy. This at once attracted my attention, as Sir Charles Bell is one of our great neurologists of the past, and I have followed the work of his successors down to the great work of Sir Charles Ballance with much interest. The loss of taste in the anterior two-thirds of the side of the tongue is an observation which bears directly on the function of the facial nerve and lobe in many teleostean fishes, upon which there is a great deal of recent work. But the

reason which prompts me to write this letter is the list of analgesics recommended—empirin co., veganin tablets, and allonal. Is it wise for a teacher writing for the general practitioner to ignore the drugs which are readily available and only give a list of the latest proprietary preparations? This seems to me to be a bad habit, against which a protest should be made.—I am, etc.,

Beccles, Sept. 30th. H. Muir Evans.

Cardiac Resuscitation

Sir,—I was interested to read in the *Journal* of September 21st Dr. W. B. Primrose's article on cardiac resuscitation. The second case he describes is very similar to my experience two weeks ago at Denbighshire Infirmary.

The operation was a Caesarean section in a healthy woman of 22 (with contracted pelvis) under stovaine spinal anaesthesia, 1.5 c.cm. of Barker's solution being injected in the interspace between the third and fourth lumbar vertebrae. About ten minutes after the spinal injection, just after I had made the skin incision, there was complete cardiac and respiratory collapse, as evidenced by absence of pulse, lack of bleeding, and post-mortem colour of the face and muscles.

The head of the table was immediately lowered and artificial respiration applied, but not persisted in for more than a couple of minutes in view of the absence of response and the desperate nature of the case. I then gave 1 c.cm. of intracardiac adrenaline, and immediately afterwards completed the incision into the abdomen and introduced my right hand into the left subphrenic region. The heart was easily felt through the lax diaphragm, lying still. With a little manipulation, which consisted in squeezing the heart gently two or three times, I could feel a fluttering sensation in my hand, which gradually became stronger. Artificial respiration was carried on by a colleague, while I still kept my hand in the abdomen for several minutes, to see that the beat was maintained. The colour gradually improved and the pulse became stronger. I completed the operation, the patient remaining unconscious. She was unconscious for twenty-four hours after the operation, and, as in Dr. Primrose's case, there were signs of cerebral irritation—extreme restlessness, stertorous breathing, and rigidity of the neck and limbs. She was not normal mentally for forty-eight hours after the ordeal, but since then has made an uninterrupted recovery.

This case seems to support Dr. Primrose's argument for earlier attempts at cardiac massage, as from the time of collapse to the manipulation of the heart it could not have been more than four minutes, although it seemed like hours! I doubt, however, the practicability of the anaesthetist's changing place with the surgeon in such circumstances, as I found that little effort was needed at restarting. It takes some minutes to scrub up and don gloves, otherwise there is a risk of the patient recovering for a time and dying later from septic infection.—I am, etc.,

J. Trevor Lewis, M.B., B.Ch., B.Sc.

Denbigh, N. Wales, Sept. 26th.

Blood Pressure in Cerebral Thrombosis

Sir,—Mr. E. G. Fenton, in your issue of September 28th (p. 601), in recording an interesting case of cerebral thrombosis, writes: " . . . and his blood pressure to my surprise was 132/74." My feeling is that after a " stroke," so far as the blood pressure is concerned, one need not be surprised at anything, and in his case I should rather have expected a blood pressure of 132/74.

On referring to *Price's Textbook of Medicine* I note: " Thrombosis tends to occur when the blood pressure is low and the circulation less active. In Sir E. Farquhar Buzzard's article, from which Mr. Fenton quotes, no mention is made of blood pressure, and so I take it that in these cases he does not consider it to be of any great clinical importance, although I am not suggesting that the recording of the blood pressure should be omitted.

On August 9th of this year I saw an almost parallel case to Mr. Fenton's, except that the patient was 85 years of age and his arteries were hard and calcareous. In this case I did not take the blood pressure, as I have been told that there is a certain amount of danger where the arteries are brittle.—I am, etc.,

A. Segerdal, M.D., D.P.H.

Coalville, Leicester, Sept. 30th.

Industrial Hazard from Electric Welding Fumes

Sir,—The symptoms noted by Dr. Dickson (September 28th, p. 602) are suggestive of zinc poisoning. Zinc poisoning is not on the Schedule of Industrial Diseases.

A few years ago I was asked by the manager of a metal works if I could explain why his men were going sick one after another. They had worked for years at oxy-acetylene welding of iron plates, and it was only since they had changed over to galvanized plates that the trouble had begun. The symptoms complained of were sore throat, tightness in the chest, difficulty of breathing, and sickness. When I went into the works I noticed that the men had their noses very near the work, and that they were inhaling the white fumes which arose. Efficient ventilation was afterwards installed, and there have been no more cases.—I am, etc.,

Birmingham, Sept. 29th. Robert Anderson, M.D.

Foetal Cephalometry by X Rays

Sir,—May I be allowed to comment on your annotation in the *Journal* of September 7th on this subject? The remarks made faithfully reflect the customary resistance of most London obstetricians to the employment of *x* rays or any other innovation in midwifery.

Under the present conditions of midwifery practice it is clearly desirable that only conservative methods should be taught, seeing that lack of material makes it inevitable that the great majority of practitioners can never become expert. This, however, can be no excuse for the neglect of research on a large scale, or for failure to test new methods for fear of their misuse. Critical conservatism must always be the basis of good practice, but a distinction should be drawn between conservatism and unprogressive indolence in the face of a mass of unsolved problems. The firm pronouncement that midwifery is an " art " helps very little. It simply means that under existing conditions and with present methods few of us may ever hope to pass beyond that dangerous point at which we possess the licence to interfere but not the necessary judgement. No amount of improved tuition of students will materially improve matters in the absence of the unattainable continuous practice, or of methods which will make fewer demands on the skill of the practitioner.

With regard to the cost, the millions can well wait until the need for them is proved. In the meanwhile, 10,000 cases a year at £1 or less each would soon provide the necessary evidence as to the value of cephalometry with pelvimetry. It is emphatically denied that " *x*-ray methods can never be a final guide." On the other hand, it is contended that after a few months' practice such information may be obtained as will in a difficult case expose clinical judgement for the makeshift thing it is. The plain fact is that in a variety of difficult individual cases even the expert simply cannot *know*. His clinical findings leave him in such doubt that he is obliged to rely on statistics, comforting himself with the assurance that there is probably only a 1 in 1,000 chance of losing the

mother from disproportion. In fact, on the figures his judgement is almost more likely to be confident and accurate if his advice be given by telephone, without seeing the patient. The figures are so reliable and comforting, while the individual case is apt to be so discomforting, especially as labour progresses, or doesn't, as the case may be.

Cephalometry is as yet in its infancy, and while no claim is made to infallibility it is already more reliable than any clinical method. Naturally, its findings are considered in conjunction with all other evidence, as with any laboratory method. The contention is that if it should be found in a considerable proportion of cases that information is obtained which can be got in no other way, then there is no justification for withholding the examination. No one can say in which case information of vital importance may be secured.

Induction of labour is falling into some disrepute because the methods used are unsatisfactory and the clinical data on which it is based are unreliable. In the future there will undoubtedly be a place for induction, based on cephalometry and carried out by rupture of membranes, or, better, by some method of physiological control yet to be discovered. With regard to pelvimetry, the method described by me is of use only when *x*-ray examination has been neglected until near term. The proper time is clearly in the early days of pregnancy, when the accurate methods of Roberts or Rowden can be applied with the simplest outfit.

Immediate maternal mortality at the moment is being made the test of progress in midwifery. Should this remain the sole criterion, progress will continue to be slow. It is suggested that many other factors should be considered, including the mortality of certain gynaecological diseases and operations, to say nothing of foetal mortality and the future comfort of those mothers who do not figure on the mortality lists. Those who are familiar with the carefully conservative writings of Dr. Thoms will realize that if the "art" of midwifery has reached its peak the foundations of its science are being soundly laid, and that already help is available without waiting "for many years" to acquire the most elusive factors of this too difficult art.

Perhaps, to avoid misapprehensions, it should be made clear that I am not a disgruntled radiologist, but a general practitioner who has had much help from radiography. This letter was written because it begins to appear that midwifery has transcended the arts and become a religion whose dogma may not be assailed.—I am, etc.,

Bexhill, Sept. 25th. NORMAN REECE.

Chloroform in Midwifery

SIR,—As a chloroform adherent of thirty-five years' standing I should like, in response to the challenge of Dr. W. E. Cooke of Wigan, to give reasons for the faith that is in me, or rather in chloroform as a safe anaesthetic to be used, if need be, in all cases of obstetric practice. Since graduating in 1900 I have administered chloroform on exactly 3,110 occasions without a fatality, and fully intend to continue to do so with the same confidence. This total includes obstetric, surgical, and dental cases, and I know that the figures are correct, having carefully noted them at the time. I have attended 1,741 confinements, the vast majority of which received chloroform from a drop bottle, upon an ordinary mask, and no other form of anaesthesia. There were no deaths in any way attributable to the anaesthetic, unless one includes a case of vomiting culminating in acute yellow atrophy of the liver and following parturition. It is, however, advisable to recall the fact that as regards this rare disease the large proportion occur in pregnancy, and are no more attributable to the anaesthetic than eclampsia. In any case, surely that is a very small percentage, and ought to satisfy the most exacting statisticians.

As a follower of Simpson, having sat at the feet of his nephew Sir Alexander, I hold that chloroform has stood the test of time, and that it has little or no effect upon liver and kidney if properly administered. How otherwise does Dr. Cooke account for the salutary effect in eclampsia? If administered slowly, a small amount at first, and so far as to control muscular action, it cannot possibly produce any deleterious effects worthy of mention except in an infinitesimal number of cases. Careful attention should be given throughout to respiration, the colour of the pinnae, and the state of the pupils (contracted), thus at a glance observing the effect on respiratory, circulatory, and nervous systems. A successful anaesthetist always keeps his eye on the patient.

The same rules apply to all anaesthetics. Regarding the use of chloroform in midwifery, so safe is it that, under medical supervision, a midwife can continue light anaesthesia when required. I have no faith in new-fangled, explosive contraptions nor in modern substitutes. Why add the risk of using inflammable and explosive mixtures at all? I may be regarded as a heretic in these matters, but I never examine the heart—it merely flurries the patient—nor do I find it necessary to carry restoratives, artificial respiration being always a stand-by. No reliance can be placed upon the "statistics and clinical facts" referred to by Dr. Cooke nor upon the authorities quoted, in so far as they are applicable to the human subject, and until I see a case of "sudden cardiac arrest during induction" I refuse to believe it possible under ordinary circumstances. The opinion of the general practitioner is of more value than that of all the pundits.

As I wrote on a former occasion, practically all fatalities are due to an overdose (and possibly because of idiosyncrasy, for the lethal dose varies in individuals), but with ordinary care these can easily be averted. *Verb. sap.*—I am, etc.,

Cowdenbeath, Fife, Sept. 20th. JOHN B. PRIMMER.

Convalescence following Laparotomy

SIR,—In surgical treatment there is a tendency to shorten the rest period after trauma and so restore function early. The views of your readers on the application of this principle to abdominal operations I should be interested to learn. The following case prompts this letter.

A female, aged 22, had suffered for about three years with attacks of right-sided abdominal pain. I concluded she was having recurrent attacks of appendicitis, and referred her to a teaching hospital. The diagnosis was agreed, she was admitted to hospital a few days later, and appendicectomy performed. Clips were removed on the fifth day after operation. On the same day she was got out of bed, but fainted. On the sixth day she was discharged. She described herself on reaching home, by taxi, as "iller" than she had ever felt in her life before—in fact, as though she might die. I visited her on the seventh day, and found her sitting up, but she was having attacks of right-sided abdominal pain. She returned to bed, and I examined her after a short rest. She looked more ill than I am accustomed to see such patients. The temperature was normal, the pulse was 100 and of poor volume. There was a scar of a gridiron incision four inches long. The abdomen was markedly tender. A small daughter, aged 3, made herself a nuisance by crying, jumping on the bed, and crawling over the patient.

I submit that such a shortened convalescence, while of obvious convenience to a hospital, is obtained at the expense of the patient, who may suffer needlessly.—I am, etc.,

Hampstead, N.W.3, Sept. 28th. J. V. MACGREGOR.

Circumcision

Sir,—To the other not negligible points in favour of circumcision already recorded by many of your correspondents I hope you will permit me to add that all those whom Providence (with a capital P) has cast for the lot, or doom, of working in a venereal diseases clinic (and especially in one for seafarers) can have only preference for the circumcised patient. He is cleaner, easier to handle and treat, and his condition easier to diagnose.

While there is no convincing evidence yet presented of less incidence of syphilis in the circumcised, our observation here is that in patients with primary syphilis presenting themselves for diagnosis and treatment there is a higher proportion of sero-negative cases among the circumcised. Obviously the lesion has been the sooner noted by its circumcised bearer ; and this is true of all other lesions occurring on glans or frenum or on under-surface of prepuce. The sooner noted the sooner is treatment sought. Venereal warts and buboes are rarer in the circumcised. Many adult males who have experienced sexual intercourse before and after circumcision have, on questioning, reported either " no difference " or " better " ; none has said " worse." Mr. Havelock Ellis records the preference of the copulating woman for the circumcised male. And, look you, Sir, providence (surely now with a small p) has contrived that gorilla and chimpanzee be born without prepuce.—I am, etc.,

H. M. Hanschell.

V.D. Clinic, Seamen's Hospital, Royal Albert Dock, E.16, Sept. 30th.

Sir,—If your correspondent " F. G." (September 21st, p. 560) would refer to the *Journal* of January 27th, 1934 (p. 144) he would find reported some facts relevant to the question " Does removal of the prepuce lessen the incidence of syphilis?" An inquiry into the relation between presence or absence of the prepuce and acquired venereal disease in four hundred consecutive patients attending the department for venereal diseases at Guy's Hospital failed to show any appreciable difference, and we were led to believe that as far as our own facts went there was no lessened risk of acquired syphilis in the circumcised.—We are, etc.,

V. E. Lloyd.
N. L. Lloyd.

London, W.1, Sept. 30th.

Sir,—No doubt more than enough has already been written in your columns on circumcision, and views have been expressed with almost religious fervour. I feel, however, that the letter of Dr. Cecile Booysen in your issue of September 7th should not go unchallenged. She writes :

" Apart from the immediate physical effects, there is considerable evidence that an operation . . . may yet cause psychological trauma, which may either show itself at once or become obvious only in adult life."

I do not know, nor does she tell us, on what evidence this assertion is based ; but I am confident that the treatment she practises in place of circumcision will most certainly tend to bring about a most serious psychological trauma—namely, the habit of masturbation at a not very much later date. As I understand it, the treatment consists of stretching and freeing the foreskin daily for " one or two weeks," and when it is free the mother is instructed to carry on " when the child is washed as often as seems necessary to keep the glans clean." She adds, " with adequate patience the whole thing can be done entirely without pain or risks. . . ."

I have no doubt that the child exhibits no sign of pain but rather of pleasure, for as every child's nurse knows, nothing quiets a child so much as gentle manipulation of his genitals. At the same time nothing is more apt to start the habit of masturbation than regular and long-continued manipulation of the penis. We are many of us familiar with the melancholy sight of a child of 3 or 4, or even younger, masturbating, and most investigators in this field are satisfied that this practice in the very young is the result of unwise handling by parent or nurse, which has taught the child the possibility of pleasurable sensation from friction on those parts.

In a letter in the next column Dr. Carmichael advocates much the same procedure. His treatment requires seven to ten days' intensive manipulation, followed by occasional handling at bath-time.

In my view, if the glans can only be kept clean by regular manipulation of the foreskin, then it had better be left dirty or its covering removed surgically. Whether it is any more necessary to cleanse the male glans than it is to wash out the virgin vagina, I will leave to your readers, but in my view the increased liability to syphilis and cancer in the uncircumcised is sufficient justification for removing the foreskin.—I am, etc.,

Bournemouth, Sept. 22nd. C. E. Gautier-Smith, M.B.

Shifting Sands of the Architecture of Medicine

Sir,—I have taken Dr. Ruthven Mitchell's friendly advice in the *Journal* of August 24th, and been able to see for myself at the Homoeopathic Library how difficult it must be for anyone in homoeopathic practice to put down the fundamental principles of homoeopathy briefly in good plain English.

It is clear that the divergence of opinion as to precisely what *similia similibus curentur*—" the central law of homoeopathy," as it is pronounced to be—really means is immense. There are those who apparently hold that the fundamental principles involved include that implied in the saying " a hair of the tail of the dog that bit you." Others that it includes a hair of the tail of any dog like the one that bit you. Others that the tail of the pure-bred Hahnemann dog has only one hair. And perhaps what gives rise to the feeling of persecution that so many homoeopaths evince is the laughter, not at them at all, but at the fanciful mental picture that such reflections conjure up of a dog with two tails—one of each variety. The motto is full of possibilities, whether in English or in Latin. It might be judged wise to refer the whole matter to the General Medical Council or the Medical Research Council for their ruling as to what the fundamental principles of homoeopathy may be taken to be before being added to the curriculum of the medical student, as another correspondent advocates.

Let there be no misunderstanding—the world has a right to know, and wants to know, what, however great or small, homoeopathy can contribute to the general welfare. If the unchanged fundamental principles laid down over one hundred years ago still hold good, it is high time that the secret of what they are was disclosed in good set terms ; for, judging by results published or unpublished, the principles do not seem to be generally applicable, nor, judging by the homoeopathic literature, do they appear to be generally appreciated, for the reason given that an ignorant and derisive world does not understand them or want to. Certain it is that one man has had the wit and courage to brave the Hahnemann thunder and apply himself to the study of the reactions of the human body to a selection of salts prepared according to the directions given, without any regard for the homoeopathic principle as to choice in their administration. Those who have been at pains to follow

his simple method of using them have perhaps been able to obtain, as I have, surprisingly constant reactions identical with those Dr. Schussler describes.

It would appear that the employment of various kinds of snake venom in potentized form, thus following the lead of homoeopathic practice, is engaging the attention of those who are not homoeopaths. On the other hand there is an extremely suggestive reference in J. T. Kent's masterly work on *Homoeopathic Philosophy* to the effect that, if you do hit on the single remedy appropriate to an individual case, both symptoms and physical signs flare up and/or disappear in the reverse order of their occurrence, in an exactly similar sequence to that described by Dr. William Brown on the psychological plane. There are, however, perchance others in the world who may be inclined to the view that the basic cause of disease and its treatment are not to be found on the material physical plane nor even on the psychological, but perhaps on what for want of a better term one might call a "spiritual plane." In other words, that misdirected energy, misconduct, the outcome of misdirected thought or choice is the primal cause, and hence that the use of the word *curentur* in the homoeopathic motto would not appear to be wholly justified.

For the present perhaps we may content ourselves, ignorant as we of the orthodox school recognize ourselves to be, with our own motto of *mens sana in corpore sano* as holding out the best promise for the future of our race. —I am, etc.,

London, N.W.8, Sept. 23rd. F. A. Hort.

⁂ This correspondence is now closed.—Ed., *B.M.J.*

Old Parr

Sir,—The annotation on Old Parr in the *Journal* for September 28th (p. 590) might be taken as a reflection upon the reliability of William Harvey. In Harvey's manuscript account of Old Parr, and the post-mortem examination of his body, he states that he had "died on the 14th of November, in the year of grace 1635, after having lived one hundred and fifty-two years and nine months." Now Harvey, by royal command, had attended Parr in his fatal illness, and he also appears to have interviewed Parr's wife. As one of the greatest pioneers in scientific medical research, Harvey's work was dominated by an aversion to the unverified opinions of other people; he held, in his own words, that "it is erroneous and almost foolish to inquire what others have said, and omit to ask whether the things themselves be actually so or not." Knowing that this was his guiding principle, I think we may safely assume that he had fully satisfied himself as to Parr's age, and that if there had been any doubt in his mind he would have prefaced his exact statement of the age by the words "as it is alleged"; but he did not do so. Neither is it likely that so astute a connoisseur of antiques as Thomas Howard, Earl of Arundel, would have taken the trouble to bring Parr to London unless his previous investigations had convinced him with regard to the man's age; nor would Charles I have commissioned Anthony Van Dyck to paint the beautiful portrait of Old Parr, now in the State Gallery at Dresden, if there were any reasonable doubt in the matter of his age.

The extraordinary fact, which is noted by Harvey, that Parr "only recollected the events of the past few years," has been adduced as evidence of imposture; but if Parr was actually only about 100 years old, as W. J. Thoms has proposed, it could not have assisted his imposture to pretend to have forgotten the Armada (1588) and the warning beacon on the Wrekin.

Your annotation states that it was the locality of his death that secured his burial in the Abbey; this might have secured him burial in the graveyard of St. Margaret's, or possibly in the graveyard on the south side of the Abbey, but certainly not in the Abbey itself; for this poor, illiterate, and blind old man had no claim to any distinction other than his phenomenal age.

A slight discrepancy in the surviving records is perhaps worth calling attention to. On the cover of Harvey's notes it is stated that he made the post-mortem examination on November 16th, the words "the birthday of the Queen" being added, whilst on Parr's gravestone it is stated that he "was buryed here November 15, 1635." —I am, etc.,

Bridgnorth, Sept. 30th. W. Watkins-Pitchford.

Lambeth Degrees

Sir,—With reference to Dr. L. A. Parry's question concerning the degree of Doctor of Medicine conferred by Archbishops of Canterbury, the last occasion on which this degree was conferred was January 16th, 1880, when James Rogers of Swansea received the M.D.Lambeth, at the hands of Archbishop Tait. Rogers was already an M.R.C.S. and L.S.A., and was medical officer to the Swansea Rural Sanitary Authority. He had been mayor of Swansea, and locally possessed a distinguished reputation for social work, for which the Lambeth M.D. was undoubtedly an *honoris causa* gesture on the part of Archbishop Tait. Although the Medical Act of 1858 admitted to the newly formed *Medical Register* any person to whom the degree of Doctor of Medicine had been granted "prior to the said Act" by the Archbishop of Canterbury, since that date Lambeth medical degrees have been conferred only upon regular practitioners whose names appear on the *Medical Register*.—I am, etc.,

London, S.W.3, Sept. 30th. A. H.

⁂ We have received from Dr. Cecil Wall a fully documented account of Lambeth degrees, which he has compiled from notes collected over many years, and we hope to publish this under "Nova et Vetera" when space permits.—Ed., *B.M.J.*

Surplus of the Defence Fund

Sir,—In reply to Dr. Robert Anderson's letter in the *Supplement* to your issue of August 10th (p. 99) referring to the surplus, which in some cases has already occurred through the quota to the Medical Defence Fund, may we suggest that this money be given to the Royal Medical Benevolent Fund and to Epsom College.

The objects of the Fund are well known; it is a general medical charity, and the only one of its kind where the funds are distributed after careful examination to applicants whether they be subscribers or non-subscribers. It holds out the hand of charity and benevolence to suffering and afflicted medical practitioners or their families.

Epsom College provides the best type of public school education for doctors' sons at as near cost as possible, and gives free education at the College for a limited number of sons of medical practitioners, as well as fifty pensions for persons in reduced circumstances.—We are, etc.,

D'Arcy Power,
Chairman of the Committee of the Royal Medical Benevolent Fund.

Raymond Crawfurd,
London, Sept. 25th. Chairman of Epsom College Council.

The Status of the Ship Surgeon

Sir,—Necessarily a little belatedly, I have read with much interest Dr. J. R. Hamerton's letter in your issue of September 14th. Perhaps the views of one who has had some ten years' experience of this work in various ships in many parts of the world may also be worth reading.

I can fully endorse Dr. Hamerton's statements regarding the average layman's views of the ship surgeon as a type. But, as I pointed out in an article in this *Journal* about a year ago ("Port Sanitation and Common Sense"), these views are now at long last being altered in view of the improved status of the surgeon and the greatly increased provision of medical equipment and hospitals on board. Some of the larger lines—for example, Cunard, C.P.S., Orient, and P. & O.—provide a trained nurse (or nurses), together with attendants, who are under the surgeon's orders, thus making him independent of chance assistance among the passengers; and Dr. Hamerton might be a little surprised to find the high standard of professional ability shown by many of the senior surgeons in the above lines. But surely he is expecting *rather* much of shipping companies. Large lines, like the above, have a medical superintendent, and provide excellent medical equipment on board. But it must not be forgotten that the primary object of a shipping company is to make money, and a small line cannot be blamed if it is satisfied with a man whose name is on the *Medical Register*. At the least, he is fully qualified, and this is more than the law requires for the shore-living population; and in any case, let me assure Dr. Hamerton that supply and demand have raised the standard considerably, even here.

The suggestion as to a rota of men in active practice is surely impracticable. What is going to happen to these men's practices while they are away, especially on a long voyage? In regard to studying at sea, this is entirely a matter of will power. The surgeon in the small ship must learn to scorn delights and live laborious days. I am at present in such a ship, and Dr. Hamerton will be interested to know that (with what, I fear, is a misguided optimism) I am studying for a higher surgical qualification. With visits to one's hospital when on shore leave it is quite feasible to keep up with the times in knowledge and efficiency. It would surely be too much to expect a shipping company to pay a locumtenent as well as the fees of its surgeon, whom they rightly expect to know his job and to learn anything further (as indeed most doctors do!) from experience. And what of the average panel practitioner in this connexion? Is *he* so anxious to take advantage of the leave courses provided for by the Ministry of Health? It would be interesting to know the figures as to this. There must be thousands of general practitioners in this country who are so tired from the work in their large practices that their "reading" is confined to a glance at the daily newspapers.

Lastly, in regard to surgical emergencies, I cannot help feeling that Dr. Hamerton has not quite got the correct perspective here. Serious illness must always be rather exceptional at sea, and this would apply to his abdominal emergencies. In all the time I have been at sea I have only seen two: one occurred in port and was disposed of by phoning for an ambulance; the other, an appendix abscess, I did myself (fortunately successfully) in mid-Atlantic in a small ship, with the chief officer very efficiently giving the anaesthetic and an elderly nurse-passenger holding the retractors. *Mutatis mutandis*, are similar things not happening in many a country district ashore, even to-day?—I am, etc.,

John S. Meighan, M.B., Ch.B., B.Sc.

Glasgow, Sept. 30th.

Registration of Opticians

Sir,—Dr. Sydney Tibbles's letter in the *Journal* of September 28th (p. 603) is full of sound common sense. Those of us in the medical profession who take the trouble to think of the matter at all are agreed that the examination of eyes and prescription of glasses is a medical job. Many doctors, unfortunately, take little interest in their patients' visual troubles. A lady told me recently that her doctor, when she had asked him what to do about her eyes, had told her to go to a well-known stores.

The National Eye Service is a very excellent service as far as it goes, but I have an idea that it does not go far enough. Nearly every person in a civilized country has to wear glasses at some time or other. We say to the public, "You really should realize that eye examination is a doctor's job. In your own interest you should not go to a sight-testing optician." There are thousands of insured persons whose societies will not pay the 10s. 6d. surgeon's fee (probably they will only pay 5s. "sight-testing" fee). A few of these people may elect to go to the N.O.T.B., and make up the difference themselves. The vast majority know little and care less about the distinction between an oculist and an optician; they go to the latter. Moreover, I have frequently been told by doctors that they hesitate to advise patients who can ill afford it to take advantage of a service which will cost them more. If only this difference of 5s. 6d. odd could be got over (split between the surgeons and the dispensing opticians), untold thousands of patients would take their benefit through the N.O.T.B. The surgeon would get 7s. 6d. or 8s., but he would have a greatly increased number of patients. Working full time, for example, at a fee of 7s. 6d. an oculist could make at least £2,000 a year. We do not say to a patient with a chronic appendix or a fibroid uterus, "If you cannot pay a certain minimum fee we can do nothing for you. You must go to the quacks." If the patient goes to the quacks in spite of our advice it is not our fault. If, therefore, the examination of the eyes is, as Mr. Bishop Harman has so ably emphasized, a medical man's job *in every case*, we have before us a very definite responsibility. A very large number of those whose eyes are examined go in the first place to the doctors. The doctor's clear duty, if he does not do eyes himself, is to recommend the patient to another doctor who does. In this matter the hands of the insurance doctor are at present tied. He should be able to say, "Take the letter from your society to the National Eye Service. It will not cost you a penny more than if you go to a sight-testing optician." The average panel doctor simply will not bother to explain at length to every patient that he should spend a few shillings extra and be examined by a doctor. Anyway, in most cases it would be a waste of time.

Dr. Tibbles's reference to the dental surgeon (who may be a registered medical practitioner) employing a mechanic is entirely apposite. In these days many dental surgeons do not keep a mechanic, but send their work to a firm of dental mechanics, who execute the work expeditiously and accurately. Surely there can be no objection to a doctor ordering glasses for his patients from a wholesale optician. I am all for supporting the dispensing optician. In one place where I practise I am fortunate in having a dispensing optician just round the corner. I also practise in another place where there is not a dispensing optician within a mile. If I gave a prescription the patient would in nine cases out of ten (as I know from experience) take it to a sight-testing optician to be made up. I am somewhat expert in the matter of frames and measuring, and I can supply glasses in most cases within forty-eight hours. I supply some hundreds during the year in this manner, and I charge an inclusive fee to cover

examination and glasses. I cannot see that anybody can raise any possible objection; my patients are more than pleased not to have the bother of going on elsewhere to get their glasses. Thousands of doctors all over the country dispense medicines. Moreover, they repeat medicine when required. If this is not "selling" an article, what is? Curiously enough, the custom is so old-established that the chemists do not mind! If doctors can "sell" teeth and medicines, to say nothing of trusses and abdominal belts, why not glasses?—I am, etc.,

London, Sept. 29th. "G.P. Oculist."

Criminal Abortion: Some Figures

Sir,—In criminal abortion the law makes no distinction between miscarriage and abortion. In England the crime lies in the criminal intent, whether the woman be or be not with child. In Scotland, however, the woman must be pregnant, and it is necessary in the charge against the accused to prove the pregnancy.

The law takes no cognizance of whether expulsion takes place before or after quickening. In fifteen cases tried in Glasgow the duration of pregnancy was as follows: two occurred in second month, six in third month, three in fourth month, one in fifth month, three in sixth month.

As to the means of induction, in twenty-three cases drugs were more popular than instruments in the proportion of fourteen to nine. The drugs employed were: iron and aloes pills in five cases, ergot in three cases, slippery elm bark in two cases, lead pills, pennyroyal pills, quinine sulphate pills, aletris cordial—each one case. The instruments used were: knitting needle one case, curette one case, uterine sound one case, crochet hook two cases, catheter four cases.

I am indebted to Professor John Glaister, Forensic Medicine Department, Glasgow University, for permission to publish these figures, which are culled from the records of the late Professor John Glaister, M.D., LL.D.—I am, etc.,

University of Glasgow. F. W. Martin.

Social Medicine

Sir,—Your leading article on social medicine on August 10th quotes Dr. Etienne Burnet as saying: "The object of social medicine may be described as the equalization of classes, rich and poor, in respect to health." Though true essentially from the point of view of disease—which, as my old teacher the late Professor Samson Gemmell of Glasgow never tired of preaching, is no respecter of persons—such equalization is far from being realized from the point of view of prevention and cure. Hence the relative failure, which you point out, of all our modern research and therapy to eliminate or seriously to mitigate disease.

It would pay the rich (to put the reason for their help on no higher ground) to help in such equalization of medical services by substantially contributing to the financial side. The reservoir of possible infection to themselves would be removed by effective dealing with endemics and epidemics among the poor. The evolving of such a contributory scheme combining all the freedom of private practice with all the benefits to all that only the rich can afford to pay for at present has long interested me. I published a first draft of such a scheme eleven years ago under the title "Is State Medicine Feasible?" in *Medical Economics* (New York), and a slightly altered version in the *South African Medical Journal* in December, 1933, under the title "The Panel."

Prior to the latter date I extended the principle, originally designed for the medical profession alone, to all trades and professions. After writing a draft of my general scheme I read in your correspondence columns of the Douglas social credit scheme, and, having got in touch with Douglas through your courtesy, modified my scheme a little in his direction, though in principle both were the same from the first. As the principle is a Christian one I published my scheme in the South African Presbyterian Church magazine *The Churchman* in June, 1935. My general scheme includes the particular one so far as finance goes, but I mean to write up the medical one with details of medical service to date.—I am, etc.,

Durban, Natal, Sept. 9th. C. Lundie.

RADIUM COMMISSION

The new National Radium Commission has been elected, and consists of the following members. The appointing body or person is indicated in parentheses.

The Earl of Donoughmore, Chairman.
Sir Cuthbert Wallace, Vice-Chairman (National Radium Trust).
Dr. T. Carnwath (Minister of Health).
Dr. T. Ferguson (Secretary of State for Scotland).
Dr. Rupert Hallam (National Radium Trust).
Dr. G. W. C. Kaye (Department of Scientific and Industrial Research).
Professor J. C. G. Ledingham (Medical Research Council).
Mr. J. J. M. Shaw (National Radium Trust).
Mr. G. F. Stebbing (National Radium Trust).
Professor Beckwith Whitehouse (National Radium Trust).
Professor James Young (National Radium Trust).
Joint Secretaries, Dr. G. W. C. Kaye and Mr. G. F. Stebbing.
Office Secretary, Miss K. Griffiths.

The Commission will meet as heretofore at 5, Adelphi Terrace, Strand, W.C.2.

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS

As a result of many months of negotiation the Association of Industrial Medical Officers came into being at a meeting at the London School of Hygiene, University of London, on September 27th, when twenty medical practitioners giving whole-time services to industrial firms in London and the provinces decided to form this body as the association representative of their branch of practice. This number will be augmented at an early date by the election to membership of many other whole- and part-time practitioners actively employed by industrial firms, all of whom are invited to apply for membership. The association replaces, and continues the work of, the previous Council of Industrial Medicine, which was formed ten years ago in the Federation of Medical and Allied Services. Its members continue also to constitute the Advisory Medical Committee of the Industrial Welfare Society. The new association will hold its meetings at the London School of Hygiene, Keppel Street, W.C.1, where accommodation has been provided by Professor W. W. Jameson, the director. These meetings will be held three times a year in London and once a year in the provinces, and each meeting will be followed by a dinner in the school and a conference on the following day. The first chairman is Dr. N. Howard Mummery, of J. Lyons and Co., Ltd., and the honorary secretary is Dr. Donald Stewart, of Imperial Chemical Industries, Ltd., Birmingham. The subscription has been fixed at five shillings annually. The objects of the association are to provide the means whereby medical practitioners attached to industrial concerns can meet to discuss the many problems that arise in their work, in regard to both preventive medicine and remedial surgery, and thus enhance their value to the management of their individual firms, promote the knowledge of their specialty, and increase their usefulness to industry as a whole. Although a good deal has already been done in these directions during recent years it has been obvious that a more intensive study directed to reducing the vast amount of unnecessary industrial incapacity and absenteeism is needed. This the new association has the means and the will to carry out. Already

a good start has been made, for at the first conference, held on September 28th, a paper was read by Dr. Leonard Lockhart, of Messrs. Boots, Ltd., on the present position and future of industrial medicine, when a lively debate followed, and particular attention was given to the relations of the members to private and panel practitioners and to hospitals and clinics in promoting the recovery of sick or injured employees.

Universities and Colleges

UNIVERSITY OF LONDON

University College

A reception of students, other than first-year students, will be held on October 7th from 2 p.m. to 4 p.m.

Dr. R. J. Lythgoe will deliver a course of five lectures on "The Physiology of Vision" on Mondays at 5 p.m. from October 14th to November 11th. A course of two lectures on "The Physiology of Hearing" will be given by Dr. Phyllis Tookey Kerridge on November 18th and 25th at 5 p.m. The lectures are open without fee or ticket to students of the University and others interested in the subjects.

Lectures

Three lectures on the history of medicine will be delivered by Professor Charles Singer at University College Hospital Medical School, University Street, W.C., on Tuesdays, October 8th, 15th, and 22nd, at 5 p.m. Professor Singer will speak on "Some Medical Books of Historical and Artistic Interest," "Some Important Contributions to Medical Science Emanating from University College Hospital," and "The History of Museums and Collections," in the order given. The lectures are open to all medical students of the University of London.

A course of three lectures, on "Neglected Aspects of Public Health Work, with Special Reference to India," will be given by Major-General Sir John W. D. Megaw at the London School of Hygiene and Tropical Medicine on December 2nd, 4th, and 5th, at 5.30 p.m. The chair at the first lecture will be taken by Professor W. W. Jameson. Admission is free, without ticket.

The Huxley Lecture for 1935 will be given by Professor Edward Mellanby, M.D., F.R.S., at Charing Cross Hospital Medical School, on Thursday, November 28th, at 5 p.m.

Rogers Prize, 1936

Under the will of the late Dr. Nathaniel Rogers the Senate offer from time to time a prize of £100, open for competition to all persons whose names appear on the *Medical Register* of the United Kingdom, for the best essay or dissertation on some medical or surgical subject to be chosen by the University. The prize will next be offered for award in 1936, and the subject named is "The Natural History of Peptic Ulcers." Essays or dissertations, which shall be in English and either typewritten or printed, must be received by the Vice-Chancellor not later than 4 p.m. on April 30th. Copies of the regulations and any further information that may be required may be obtained from the academic registrar.

UNIVERSITY OF LEEDS

The following candidates have been approved at the examinations indicated:

M.D.—J. Fielding, G. D. Gordon, J. M. Holmes, J. Q. Mountain, S. Silverman.

Final M.B., Ch.B.—*Part I:* Lily Black, Marie H. Calverley, C. L. Davidson, M. Glick, R. C. Lawrence, W. Maude, E. Moore, J. P. Senior, I. Smith, P. H. Wyon. *Part II:* A. J. E. Barlow, E. Brown, T. K. Cooke, S. C. Crystal, C. V. Light, D. G. Liversedge, T. W. Percival, F. A. Shackleton, R. G. Smithson, Helene E. Sykes, E. Vining. *Part III:* R. G. Smithson (second-class honours), A. J. E. Barlow, E. Brown, T. K. Cooke, S. C. Crystal, C. V. Light, D. G. Liversedge, T. W. Percival, F. A. Shackleton, Helene E. Sykes, E. Vining.

D.P.H.—Kathleen S. Bruce, C. G. Eastwood, E. R. Hargreaves, Lois J. Ogle, J. F. Warin, Lydia A. Wilson.

The William Hey Gold Medal and the West Riding Panel Practitioners' Prize in Medicine were awarded to E. H. Kitching.

UNIVERSITY OF ABERDEEN

The King, on the recommendation of the Secretary of State for Scotland, has approved the appointment of Ernest William Henderson Cruickshank, M.D., D.Sc., Ph.D., Professor of Physiology in Dalhousie University, Halifax, Nova Scotia, to be Regius Professor of Physiology in the University of Aberdeen, in place of the late Professor J. J. R. Macleod.

Obituary

F. C. SHRUBSALL, M.D., F.R.C.P.

Senior Medical Officer of the L.C.C.

The death of Dr. Frank Charles Shrubsall is a very sad loss, not only for those nearest and dearest to him, but also for his numerous medical and educational colleagues and friends, including some hundreds of teachers and pupils, past or present, in the London County Council Schools. His training for the Natural Sciences Tripos, at Clare College, Cambridge, seems to have indoctrinated him, when he was yet quite a young man, with the late Professor Huxley's convictions that science is organized common sense, and that "the great end of life is not knowledge but action"; and, furthermore, with the guiding belief of Oliver Wendell Holmes that "science is a first-rate piece of furniture for a man's upper chamber if he has common sense on the ground floor." Dr. Shrubsall, none the less, had a most successful career as a student of science, winning a scholarship at Clare, taking a first class in both parts of the Natural Sciences Tripos, and later winning the Shuter and the Brackenbury Medical Scholarships at Bart's. After acting as house-physician at St. Bartholomew's, and as resident medical officer at the Brompton Hospital for Consumptives, he was appointed, in 1908, to a Hunterian Professorship of the Royal College of Surgeons of England, and in the following year he became one of the chief assistant medical officers under Dr. James Kerr, who, with the able help of Dr. C. J. Thomas, was busily engaged in laying the foundations of the London school medical service. From 1909 until a few days ago Shrubsall was throwing all his wonderful energy into the work (being carried on) of educating physically and mentally defective children, and for several years before his death he was the senior medical officer in charge of all the "special school" work, and of the administration, under the London County Council, of the Blind and Mental Deficiency Acts. He had speedily become a master of the literature of his subject, and had made himself acquainted with work of a like kind that was being carried on in the United States and in Europe. He had soon become a recognized authority on medical psychology, and was in much request for advice from organizations and committees engaged in social service, on behalf, more particularly, of mentally defective children; he became, moreover, out-patient physician and lecturer on mental deficiency at the Maudsley Hospital; he also became, in co-operation with Dr. A. C. Williams, responsible for the authorship of *Mental Deficiency Practice*, a standard work on the question; and a few months before his death he was honoured by a request that he would address on this subject a meeting of justices of the peace.

He wrote "Physical Characters and Morbid Proclivities" in vol. xxxix of the *St. Bartholomew's Hospital Reports*, "Ascertainment of Mental Deficiency" (*School Hygiene*, 1921), papers on encephalitis lethargica (*Journ. Neurol. and Psychopath.*, vol. iv, 1923) and "Mental Sequelae of Encephalitis Lethargica" (*Proc. Roy. Soc. Med.*, vol. xviii). He was, moreover, a member of the Departmental Committee on Mental Deficiency, which reported in 1929. In 1924 he presided over the Anthropological Section of the British Association, and gave an address on "Health and Physique Throughout the Ages." His great success in all that he undertook must be attributed in large part to his unbounded energy and love of work; he was, however, notably assisted by judicious exercise of his remarkable gift of being able to recognize other people's points of view, and this despite his ability to "put a cheerful courage on" and to advise; indeed, if invited to do so, to supervise; and these qualifications enabled him to avoid all avoidable opposition, for his unassuming manner and

friendly attitude of helpfulness carried all before them. He enjoyed, moreover, having at his disposal unfailing help and support from his wife, Dr. Jane R. F. Shrubsall, and their daughter.

As a sometime colleague, greatly indebted to Dr. Frank Shrubsall for generous and most efficacious help over more than a dozen years, and for help from both Dr. Shrubsalls over a further ten years, the present writer turned, when honoured by the request to write this note for the *Journal*, to Shakespeare's estimate of a great personality in *Hamlet*, Act 1, Scene 2; and then, forsooth, remembered the wonderfully expressed caution of the same poet against "guarding a title that was rich before"; it is, indeed, a vain endeavour to attempt "to gild refinèd gold, to paint the lily, to throw a perfume on the violet"; but Shakespeare's own method of meeting the difficulty may surely be adopted, and I am thus justified in saying of my colleague and friend, "He was a man, take him for all and all, I shall not look upon his like again."

W. H. Hamer.

Dr. James Kerr writes:

The large gathering of medical men and women, all workers on the borderlands of medicine and social effort, who gathered in the sunshine at Golders Green last Saturday, were brought there by a personal sense of the fellowship and unselfish kindness with which Frank Shrubsall permeated his associations, and which also made his conversation so interesting.

There was more, however, than this, because his work was conducted with that infinite capacity for taking pains, thoroughness of knowledge, and honesty in scientific method which assures the truth. It was also based on a great range of study of the deeper factors affecting humanity. This was not often evident, for he was no emotional verbalist pouring forth self-evident platitudes, but made all his contributions modestly and without *réclame*. He had a long preparation in study of environment. He had travelled in almost every corner of the Empire, and seemed to remember everything. As a Cambridge student he spent vacations in geological field work with the Ordnance Survey. Later craniology was taken up and made the subject of long investigation, which extended to anthropological measurements and standards. This widened to observations on child patients, town and country types, rheumatic patients and their types; and these led him to investigate modern statistical methods.

How I found Shrubsall, or he found me, I do not now recall, but the planning of a study for standards of growth and nutrition of the London child started a friendship of thirty years. Whilst yet a resident at Brompton he began to work on our figures. Unfortunately for the country this work was stopped. To cull from memory of an impertinence a quarter of a century old, "These investigations or inquiries, however laudable or interesting in themselves, do not comply with the requirements of the code."

He was early led to interest in sound physical training as a neglected branch of education. London education wanted a mind like Shrubsall's, and he joined the staff for some slight technical service, but was soon needed for all that he could give. He turned to the mentally subnormal, in long and tiresome personal work, to determine its educational bearings. "Mental tests" were overhauled, and ultimately this section was put under his control, extended later to the whole field as it came into the Council's duties. He had a thorough knowledge of the legal bearings of this work, and foresaw many modifications. His mind was always viewing future trends. Still, ever cautious, it took him a quarter of a century to accept the idea of the "moral imbecile"; he saw no hope in "sterilization," and became humorous over "child guidance." His instincts were scholarly, aristocratic, and conservative, but controlled by his scientific method to a very modified practice. This would have been remarkable in a robust man, but Shrubsall scarcely topped eight stone in weight, and all his days was the victim of violently recurrent asthma. Only an indomitable sense of duty made him carry on, often in the shadow of death. He had no praise great enough for the aid given by his former colleague, Dr. Jane Gilmour, who helped her husband through a score of useful years; and with her and her daughter, now studying medicine, are all our sympathies.

Dr. W. Norwood East writes:

Dr. F. C. Shrubsall was well known to the medical officers of the London prisons, as the medical officers of the London County Council, in common with the medical officers of other local authorities, are authorized to examine prisoners in custody who are mentally defective with a view to their disposal under the provisions of the Mental Deficiency Acts. The relations of Dr. Shrubsall and his medical colleagues of the London County Council with the prison medical officers have been always of the happiest, and it was particularly fortunate that the admission of other medical men, in an official capacity, into the metropolitan prisons was introduced at a time when their senior was a man who commanded whole-hearted respect for himself and admiration for his work. Dr. Shrubsall's opinion was of great value in difficult borderline cases, for he appreciated the complexity of criminal problems and combined practical wisdom with scientific insight. Seldom can a medical man from one service gain so high a place in the estimation of those of another service as he did. His death will be sincerely regretted by the medical officers of the metropolitan prisons.

W. L. GRIFFITHS, M.D., F.R.C.S.

Surgeon to the Swansea Hospital

Mr. William Layard Griffiths, chairman of the Swansea Division of the British Medical Association 1934–5, died at Llandrindod Wells on September 21st, at the age of 64. He was the son of Dr. T. D. Griffiths of Swansea, who was President of the B.M.A. during its visit to Swansea some years ago. Mr. Griffiths, after qualification, served in the South African War and also throughout the great war, with the rank of major. Since returning from South Africa he had practised in Swansea, and was surgeon to the Swansea Hospital up to the time of his death. His academic career was an outstanding one. He won an exhibition at Caius, and graduated in the mathematical tripos. During his stay at Cambridge he entered thoroughly into the life of the University, and was an all-round athlete, especially as a middle-weight boxer. On going up to University College Hospital he swept the boards, being first in his year in medicine and also in practical surgery, winning many prizes and adding to his B.A. degrees in medicine, science, and surgery. He obtained the M.D.Lond. in 1901 and the F.R.C.S. in 1902.

Throughout his career he maintained his keenness, and the fact that recently, at the age of 64, he performed two successful sympathectomies for achalasia is sufficient evidence of his keenness to need no further elaboration. He was an excellent and entertaining witness, and on one occasion was explaining why surgeons hesitate to explore knee-joints without good reason, when the judge said: "I understand that also applies to trephining." "Yes, your honour," replied Mr. Griffiths, "they never know whether they will find anything!" As may be gathered, he was a delightful man socially and a most loyal colleague. He will indeed be missed for many years to come.

C. L. Isaac.

SIR JOSEPH CHAMBERS, K.C.B.

Late Medical Director-General R.N.

As briefly announced in last week's issue, Surgeon Vice-Admiral Sir Joseph Chambers, K.C.B., R.N. (ret.), died suddenly at Harrogate on September 22nd, aged 70. He was the son of Joseph Chambers, J.P., of Tandragee House, Bailieborough, County Cavan, and was educated at Trinity College, Dublin, where he graduated B.A., B.Ch., and M.B. in 1887. Subsequently he received the honorary M.D. of his university in 1924, and also the honorary Fellowship of the Royal College of Physicians of Ireland.

Entering the Navy in 1889, he served at many stations at home and abroad, and held the appointment of chief medical officer of several naval hospitals. He succeeded Sir Robert Hill as Director-General of the Medical Department on October 1st, 1923, and retired in July, 1927. He served in the South African War, and in the war of 1914–18 was operating surgeon at the Royal Naval Hospital, Chatham. In October, 1922, he was appointed to the charge of Plymouth Naval Hospital. He received the C.M.G. in 1918, the C.B. in 1923, and the K.C.B. in 1926, and was appointed Honorary Physician to the King in 1925. He married in 1908 Irene, daughter of R. C. Tanner of Chester. In his student days he was a noted Rugby footballer, and played for Ireland in 1886 and 1887, as well as for Dublin University and Devonshire. He joined the British Medical Association in 1891.

[The photograph reproduced is by F. A. Swaine, London, W.1.]

PROFESSOR JOHN ANDERSON

Sir Henry M. W. Gray writes from Montreal:

Jack Anderson was one of my best friends. Our friendship dated from the time of his student days in Aberdeen University, and I desire to join Mr. Gordon-Taylor in appreciation of Professor Anderson's qualities, which commanded admiration and affectionate respect, especially from those who were closely associated with him. Perhaps, as Mr. Gordon-Taylor indicates, these qualities were most intensely in evidence during his strenuous work as surgeon in one of the best of the casualty clearing stations, No. 20, in France. He appeared to many to be a little "stand-offish" at first, but this impression was soon dissipated on further acquaintance. His sound judgement and technique, his infinite capacity for taking pains, his insatiable industry, his unrelenting sympathetic cheerfulness, his simple honesty of purpose, his love of fair play, his abhorrence of make-believe and therefore his just consideration for all connected with him, were widely recognized. Under Lieut.-Colonel T. F. Ritchie, a very efficient and popular C.O., the "Black Prince," as Jock was nicknamed by a few of his most intimate friends, helped largely to make No. 20 C.C.S. one of the happiest in the line. The many splendid C.C.S. surgeons, especially of the Third Army, to whom Mr. Gordon-Taylor has referred in such merited terms, will, I am sure, join in eulogy of the man and deplore his loss to the surgical world. During the war circumstances threw us much together. His counsel and encouragement in trying times were of extraordinary value to me. In the Third Army "Council of Surgeons" he was an outstanding personality.

He loved open-air pursuits. One could not wish for a better companion in a shooting or fishing holiday, when his genuine sportsmanship was manifested so strongly. His home life, as I knew it, was simple but full and happy, largely governed by consideration for his mother, to whom he owed so much, who adored him, and who was so jealous for his success. Since coming to Canada twelve years ago I have been in very frequent communication with him. His letters discussed his work and ideals, and were most stimulating. He visited Montreal, at my suggestion, with the object of studying the question of taking up a surgical appointment here. It was good for Dundee and district that Anderson decided to stay where he was. He married shortly afterwards, and his subsequent letters bore testimony to an ever-increasing happiness and contentment. He realized thoroughly the responsibilities attending his appointment as professor of surgery. He was full of plans for developing the work which they entailed, and one can imagine his regret when he felt that he was inevitably doomed to die; but he *must* have realized that he could enter into the joy of his Lord with full assurance—"Well done, thou good and faithful servant!"

Dr. George William Joseph, formerly of Warrington, died at Prestatyn, North Wales, on September 22nd, aged 86. Born at Liverpool and educated at Kirkbean, Kirkcudbrightshire, he studied medicine at University College, Liverpool, where he won many academic prizes and distinctions. He qualified L.S.A., L.R.C.P.I., and L.M. in 1873, and became M.R.C.S. in 1874, obtaining the M.D. of Durham University in 1889. He was appointed resident house-surgeon to the old Warrington Dispensary in 1873, and later settled in general practice in Warrington. When the Warrington Dispensary developed into the Warrington Infirmary he continued on the staff as honorary surgeon until 1910, and from that year until his death he was honorary consulting surgeon to the institution. He was thus attached to the Warrington Infirmary for a continuous period of sixty-two years. Dr. Joseph was the first medical officer of health for Warrington, and from 1876 to 1878 he held this post as well as that of public analyst. He took a great interest in public affairs; he was elected to the town council, and was mayor of the borough from 1910 to 1913. The most important event during his mayoralty was the opening of the new bridge—the sixth of the series—over the Mersey by the King on July 7th, 1913. Retiring to Prestatyn in 1921, Dr. Joseph joined the North Wales Branch of the British Medical Association, and from time to time attended Branch meetings. He was especially interested in the cancer problem, and only last year read a paper to the North Wales Branch setting forth his views. He had a theory—based on his clinical experience—that high body temperatures were inimical to cancerous growths, and that the successes achieved with Coley's fluid and similar agents were due to the properties they possessed of producing artificial pyrexia. He was keenly disappointed that no notice was taken of his theory, and that no research was carried out. Perhaps that may come. In many respects Joseph was a remarkable man. Short in stature, knitly built, active-minded, interested to the full in public and professional matters, he preserved much of his physical and mental vigour almost to the last days of his long life. J. S. M.

We regret to announce the death on September 29th of Dr. John Trimble Elliott of Eldron, Smithborough, County Monaghan. He was undergoing treatment in a nursing home in Belfast at the time of his death. He was the eldest son of the late Rev. John Elliott of Armagh, and grandson of Dr. John Elliott of Castlebellingham. He studied in the medical schools of the Queen's Colleges of Belfast and Galway (where he held a senior scholarship), and subsequently in Edinburgh. Soon after obtaining the qualifications L.R.C.P. and L.R.C.S.Ed. in 1881, he became resident surgeon of Derry City and County Infirmary, and in 1882 was appointed medical officer of the Kilmore dispensary district, which post he held until his death. Dr. Elliott was an active member of the British Medical Association, joining as far back as

1883; he was also a member of the council of the Irish Medical Association, and honorary secretary of the County Monaghan Local Medical Committee. He took a keen personal interest in the Royal Medical Benevolent Fund, and with his energetic support helped to add substantially to its funds. Personally very popular, Dr. Elliott worked hard at all times for the improvement of his colleagues, and succeeded in placing the County Monaghan medical officers in the front rank as regards remuneration and general conditions of service. In 1930 his colleagues in County Monaghan, in recognition of his services, presented him with an address and a valuable piece of plate.

Medical News

The inaugural address at the University of Durham College of Medicine, Newcastle-upon-Tyne, will be given by Sir George Newman on Thursday, October 10th, at 4.15 p.m., in the Examination Hall of the College. His subject is "Readjustments in Medical Study."

Sir Walter Langdon-Brown will deliver the inaugural address on "Modern Aspects of Endocrinology" before the London Jewish Hospital Medical Society (Stepney Green, E.) on Thursday, October 10th, at 3.30 p.m., with Dr. David Nabarro in the chair.

Dr. A. Brown Kelly will deliver the annual address at the Central London Throat, Nose and Ear Hospital, Gray's Inn Road, W.C., on Friday, October 11th, at 4 p.m. His subject will be "The Oesophagus in Young Children: Some Anatomical and Clinical Observations."

Under the auspices of the Royal Institute of Public Health the Harben Lectures, 1935, will be delivered in English by Dr. P. Armand-Delille at 28, Portland Place, W., on Monday, Tuesday, and Wednesday, October 14th, 15th, and 16th, at 4 p.m. His subject will be "Problems of Nutrition and Growth."

Lord Balfour of Burleigh will preside at a discussion on "The Housing Act, 1935," at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Tuesday, October 8th, at 5.30 p.m. Dr. James Fenton and Mr. J. S. Wheeler will open the discussion.

A course of lectures on the place of the laboratory in clinical medicine will be held daily at the British Post-Graduate Medical School, Ducane Road, Shepherd's Bush, W., from November 4th to 30th (Sundays excepted). The course, the fee for which is £5 5s., will not be held unless a fixed minimum number of students enrol their names. Further particulars may be obtained from the dean.

The opening meeting of the Illuminating Engineering Society will be held at 2, Savoy Hill, Strand, W.C., on Tuesday, October 8th, at 4.30 p.m., when various exhibits will be on view, and a report on progress in illuminating engineering will be presented.

An additional item in connexion with the opening of the winter session at King's College Hospital Medical School (see *British Medical Journal*, September 14th, p. 525) is the introductory surgical lecture by Professor G. Grey Turner on Tuesday, October 8th, at 4.30 p.m. The subject of Dr. G. F. Still's lecture on October 10th is "Perspective in Medicine."

A series of post-graduate demonstrations will be held at the General Infirmary at Leeds on Tuesdays, at 3.30 p.m., from October 8th to December 17th, both dates inclusive. All communications should be addressed to the honorary secretary of the post-graduate committee at the Infirmary.

A post-graduate course for former students will be held at the London Hospital Medical College from Wednesday, October 16th, to Saturday, October 19th, both dates inclusive. The course opens at 10 a.m. each day. The annual dinner of the College will be held at the Trocadero Restaurant on October 17th, at 8 p.m.

The Fellowship of Medicine (1, Wimpole Street, W.) announces the following courses: cardiology, at National Hospital for Diseases of the Heart, October 7th to 18th; medicine and surgery and the specialties, at Metropolitan Hospital, October 7th to 18th; gynaecology, at Chelsea Hospital for Women, October 21st to November 2nd; neurology, at West End Hospital for Nervous Diseases, October 21st to 26th; chest diseases, at City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E., October 28th to November 2nd; heart and lung diseases, at Royal Chest Hospital, October 12th and 13th; obstetrics, at City of London Maternity Hospital, October 19th and 20th; physical medicine, at St. John Clinic and Institute of Physical Medicine, October 26th and 27th. Lectures will be given on endocrinology at National Temperance Hospital on Tuesdays and Thursdays, at 8.30 p.m., from October 8th to 24th; on modern gynaecology, at Medical Society of London, on Thursdays at 4 p.m., from October 10th to November 7th; on anatomy and physiology for the Primary F.R.C.S., at Infants Hospital, on Mondays, Wednesdays, and Fridays at 8.30 p.m., from October 7th to November 29th. Courses arranged by the Fellowship of Medicine are open only to members of the Fellowship.

Colonel George Alexander Troup, T.D., has been appointed a Deputy Lieutenant of the County of Essex.

The State Serum Institute in Copenhagen announces that, thanks to the co-operation of various doctors and hospitals, it has been possible to collect a large and uniform stock of poliomyelitis convalescent serum. During the epidemic of 1934 it was found desirable that depots of this serum should be formed in certain hospitals, and this practice is now to be continued, so that supplies will be available at a moment's notice at several different centres.

As we go to press we learn with deep regret of the death of Mr. E. Muirhead Little, the distinguished orthopaedic surgeon, who was for many years a frequent and valued contributor to these columns. A memoir with portrait will appear next week.

Letters, Notes, and Answers

All communcations in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, five lines).

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Treatment of Erythromelalgia

"A. C." asks for suggestions for remedial treatment, other than massage and electrical treatment, in a case of erythromelalgia affecting both legs from the knees downwards.

Blepharitis

"M.B., Ch.B." writes: I would be grateful for any suggestions regarding the treatment of a case of blepharitis of over twelve months' duration in a young woman of 26. All the usual remedies—general and local—including treatment for dandruff and the provision of glasses, have been tried without success.

Diet Fourteen Years After Gastro-enterostomy

"D. V." asks for suggestions for diet in a patient of 68 upon whom fourteen years ago gastro-enterostomy was performed for duodenal ulcer. "Slow recovery, then very comfortable for some years. No jejunal ulcer. Now there is heaviness and feeling of weight, especially at night, loud rumblings, constipation. Difficult to get to sleep; awake at 2.30 or 3, difficult to get to sleep again; with depression and weariness. Very difficult to rise at 7.30 a.m. Patient eats anything but beef, but not with appetite, and does not feel satisfied after eating. Weight about 9 st. instead of 11 st. 4 lb.; 10 st. 7 lb. eighteen months after operation; 8 st. at operation."

LETTERS, NOTES, ETC.

Loud Cardiac Murmurs

Brigadier-General F. E. Burnham, Halcyon Springs, B.C., writes: Reference to loud cardiac murmurs in a recent issue of the *Journal* recalls a case in Montenegro. A young shepherd boy presented himself at the ambulance of the military hospital at Plevlje in 1915. He complained that he could not sleep because of the noise in his chest. It was scarcely necessary to say there was a noise, for it could be heard in all parts of a large room, and also in the adjoining room with the door closed. It was not a murmur; it was a noise, a whistle, a screech. It could only be compared to a muffled locomotive whistle, and, *mirabile dictu*, it was continuous. No information could be gained by stethoscopic examination. I could not then, nor do I yet, understand how an organ so small could produce so much noise. Obviously, it was a congenital defect. In all other respects the boy enjoyed perfect health. As nothing could be done the case was not again seen.

Homoeopathy and Injection Therapy

Dr. A. R. Eates (Acton, W.) writes: Would you allow me to say in your columns that, at this late date, it surely ought not to be necessary for anyone to write expressly in support of the principles of homoeopathy. Why, look at all the orthodox therapeutists armed with syringes full of—what-you-may-call-it—with which they make holes in otherwise sound skins; to do what? To provoke reactions in the bodies they treat, of course. And these reactions are in the nature of the symptoms produced by disease-causing materials that have invaded the bodies so treated. Now this is what I have always understood to be the homoeopathic principle, that like things are cured by like. If I am right (and I am not a homoeopath) I don't see how the injection-therapy men can throw stones at the homoeopaths. True, there remains the size of the dose, about which a tremendous lot of funny things may be said. But in reply it may be pointed out that if the minute dose's effects are no more demonstrable than is the "osteopathic lesion" it at least does no harm. This is something that the puncturing practitioners are wholly unable to claim, in spite of all the holes they make "for ruin's wasteful entrance"; not to mention the less poetically phrased note in the *Epitome* of September 14th: "the majority showed some local reaction, such as pain, swelling, induration, and abscess, and 6 per cent. showed a general reaction consisting of fever, headache, and malaise." And, Sir, the conclusion of the note from which I have quoted causes another kind of pain, for "within five months of the inoculations Schick tests were performed on 359" of those so treated, and only "62.6 per cent. were found to be immune." Was it worth while? is my demand.

Dichromatic Vision

The fourteenth report of the Medical Research Council's committee upon the physiology of vision deals with the characteristics of dichromatic vision; and has been prepared by F. H. G. Pitt, research scholar in the technical optics section of the physics department of the Imperial College of Science and Technology (M. R. C. Special Report Series No. 200, H.M. Stationery Office, 1s. 3d.). Human colour vision has been differentiated into three main classes: trichromats, whose colour vision is a function of three variables; dichromats, in whom there are two variables; and monochromats, very rare cases of one variable only. In this report observations are recorded on the colour coefficient, luminosity, and hue distinction of a number of dichromats, and it is hoped that this will enable the study of colour-blindness to be put on to a sounder foundation. Persons with normal colour vision are trichomats, but some are anomalous, and an appendix deals in the same way with their measurements. As the result of the study it is tentatively suggested that dichromatism, including the commoner varieties of colour-blindness, is caused by some reduction in either the red or green sensations, but not in both. It may be caused by the entire absence of the green or red sensation, and the red or green sensation persisting may be reduced or magnified. It may be caused also by the fusing of the red and green sensations, accompanied perhaps by a reduction or magnification of one or both sensations. On these measurements, it is pointed out, are based, knowingly or unknowingly, all tests for colour-blindness, and the present report is intended to have a practical bearing on these tests in the future as well as on the further study of colour vision.

Health Week, 1935

Health Week will be celebrated from Sunday, October 6th, to Saturday, October 12th, throughout the British Empire. Its immediate purpose is to make health the chief topic of public concern for one week in the year; to secure recognition of the fact that disease is a thing which can and should be prevented; to impart sound information as to public and personal hygiene; and to build up a public opinion which will not tolerate a high disease rate or excessive infant mortality, and feels as a reproach the sight of an ill-nourished or neglected child. In addition to the local celebrations arranged by health authorities, comprising lectures, films, exhibitions, distribution of leaflets and posters, special sermons in the churches, articles in the local press, and any other means available to interest and instruct the public, the Royal Sanitary Institute holds a competition for school children throughout the United Kingdom in which two challenge shields and several hundred certificates are awarded for answers to a set of questions on various aspects of health and hygiene as they affect the child. The subject for this year's competition is "The Practice of Health Habits." To encourage these celebrations over-seas the Royal Sanitary Institute has offered a challenge shield to be awarded annually for the best Health Week held in the Empire outside the British Isles for each year.

Gordon Memorial College, Khartum

The annual report for 1934 of the Gordon Memorial College at Khartum relates continued progress, including the provision in the Kitchener School of Medicine of facilities for training for veterinary or agricultural careers as an alternative to the medical curriculum. The incidence of trachoma has steadily declined during the last four years. Bacteriological routine and research work has much increased; the yellow fever survey in the Southern Sudan has continued, and investigations into kala-azar have been begun. It is reported that in some cases of kala-azar the causal parasites could be demonstrated in the nasal secretion, but it is not yet certain whether this secretion is concerned in the transmission of the disease among the population. This work in the Wellcome Tropical Research Laboratories, conducted in close association with the Kitchener School of Medicine and the Gordon Memorial College, is proving of increasing value to the whole community in the Sudan. Some changes in organization are being effected. The college laboratories were founded in 1900.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 49, 50, 51, 52, 53, 56, and 57 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 54 and 55.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 164.